RESOURCE AND PATIENT MANAGEMENT SYSTEM

IHS RPC Broker

(BGU)

Installation Guide and Release Notes

Version 1.5
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Office of Information Technology (OIT)
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Preface

This document is designed to provide a user with the information needed to install, understand, and use the IHS RPC BROKER Program. Included will be:

- A brief description of the client server process

- An overview of the programs/files included with the program

- Instructions for installing the RPC Broker on the server

1.0   Release Notes

The IHS RPC BROKER package provides the underlying service and utilities used the in the communication between a GUI client and an RPMS server.

RPCs, remote procedure calls, are used to carry out a particular task that conveys information from the server to a client, such as returning a list of patients, laboratory test results for a patient, the contents of a data dictionary, e.g. CPT codes, etc.

This package is not a standalone one and currently is a dependency for IHS Patient Chart and the Electronic Health Record.

2.0   Introduction

IHS RPC BROKER uses Client/Server Technology (CST). In CST, the user presentation is removed from the server and put on a client workstation. Some of the business rules and server processes are also moved to the client. The server handles requests through an interface, processes requests, and returns data to the client. Communication between the client and the server is handled using TCP/IP. Both the client and the server must have TCP/IP-aware installed.

CST contains three functional components: (1) Client application software, (2) Client interface software, (3) RPMS server software.

Client Application Software

This is an executable program. This application sends or received data from the server using the interface component described below and provides the user's interface to the data it receives.

Client Interface Software

This software resides on the client in the form an ActiveX Control (OCX) or an ActiveX Automation Server (DLL). It establishes the unique TCP/IP connection with the server and handles the transport of data.

RPMS Server Software

(BGU name spaced routines). This server software is the MUMPS (M) code that receives the message from the interface, formats the message into an RPMS-readable form, executes the appropriate RPMS package's software, and returns data to the client. A listener waits for a connection request from the interface. If a connection is successful, the listener spawns a process partition handler that manages the session messaging. The handler validates the security and remains active until the session is terminated or times out from inactivity.

> **Note**:   The RPMS Server software must be installed on the server before the client application can be used.

3.0   System Requirements

3.1   Server Requirements

3.1.1   RISC 6000 Standard IHS Configuration

- Properly installed TCPIP

- FIFO 72 or higher for AIX 4.33 or higher

- FIFO 69 or higher for AIX 4.2

- MSM 4.4.0 or higher

- Kernel 8.0 patched through patch 8, or higher

- FileMan 22 or higher

> **Note**: A MUSERVER process must be defined for each TCP connection on the RISC platform and requires shutting down MSM to change the setting. Windows NT Server 4.0 with Service Patch 6A or Higher.

- MSM For Windows NT 4.4.1 or higher

- FIFO 10 for NT

- Kernel 8.0 patched through patch 8, or higher

- FileMan 22 or higher

3.1.2   Windows 2000 with Service Patch 2 or Higher

- MSM For Windows NT 4.41 or higher

- FIFO 10 for NT

- Kernel 8.0 patched through patch 6, or higher

- FileMan 22 or higher

3.1.3   CACHE sites

CACHE sites should have the following software requirements:

- Kernel Version 8.0 through Patch 08

- VA FileMan   Version 22.0 through patch 1001

3.2   Contents of Distribution

The bgu_0150.zip contains the following directories and files within those directories:

- Server

- Documents

The files listed in each directory are listed below:

3.2.1   Server

- bgu_0150.k   KIDS file

3.2.2   Documents

File	Description
bgu_015i.pdf	Installation guide (this file)
N/A	Technical manual
N/A	User manual

4.0   Installing Server Software

It is recommended that the terminal output during the installation be captured using an aux-port printer attached to the terminal at which you are performing the software installation. This will insure a printed audit trail if any problems should arise.

4.1   Modify MUServers (RISC AIX Platform Only)

> **Note**:   If you are installing this package on a Windows suite
>   platform, skip this step.

For the server software to run correctly, modification to the MSM SYSGEN is required to increase the muserver processes. A Muserver process is required for each anticipated client connection. Large systems may need 40 or more muserver processes, while medium may have 20-30 and small sites will have 10-20. Four of the muserver processes are used for Host File Services (HFS). Each muserver process will show when you display the processes in Unix with ps -ef command. After the modifications are made, MSM will need to be shut down and rebooted for the changes to take place. This system change process can be done during your normal maintenance schedule but must be done prior to the server installation. You should also check to see if you have modified the partition size per the recommendations from DSM. (Current recommendation is a partition size of 100k.)

```
Modification of SYSGEN is done by logging into the MGR UCI and typing:
D ^SYSGEN<>

MSM - System Generation Utility

Select SYSGEN Option:

1 - Display Configuration Parameters
2 - Create New Configuration
3 - Edit Configuration Parameters
4 - Edit Configuration Name/Comment
5 - Delete Configuration
6 - Set Default Startup Configuration
7 - UCI Management
9 - System Configuration Parameters
10 - Database Definition
12 - Device Translation Tables
13 - Mnemonic Namespaces
14 - Journaling Management

Select Option: 9 - System Configuration Parameters

Available Options:

1 - Buffer Pool Size
2 - Stack and Stap Size
3 - Dynamic Caching Options
```

```
5 - Maximum Number of Open Host Spool Files
6 - Number of Muserver Processes

Select Option: 6 - Number of Muserver Processes

Enter Number of Muserver Processes to Start <8>: ?

Enter the number of muserver processes to be created during system startup.

Each muserver process handles all host operating system I/O (Host File
Server
I/O, Tape I/O, Host Spooling I/O, TCP/IP Socket I/O, and the $$JOB and
$$JOBWAIT subroutines of the %HOSTCMD utility) for a single job. Therefore,
the number of active muserver processes determines the maximum number of
jobs that can be concurrently accessing the host operating system through
any of these mechanisms.

Press <RETURN> to continue
```

Figure 4-1: Modifying MUServers

4.2   Install BGU RPMS Server Software

The installation is a standard KIDS install process like other RPMS applications.
Routines will need to be restored into the correct UCI and then the Init is run to set up
the data dictionaries and populate the files with data. The files are name spaced with
the BGU prefix. Logon to the RPMS production UCI where Kernel and FileMan are
running and go to programmer mode.

Log into the production UCI and get to programmer mode.

```
>D ^XUP

Setting up programmer environment
Terminal Type set to: C-VT100

Select OPTION NAME: XPD MAIN     Kernel Installation & Distribution
System

Edits and Distribution ... Utilities ...
Installation ...

Select Kernel Installation & Distribution System Option: Installation
1  Load a Distribution
2  Verify Checksums in Transport Global
3  Print Transport Global
4  Compare Transport Global to Current System
5  Backup a Transport Global
6  Install Package(s)
Restart Install of Package(s)
Unload a Distribution

Select Installation Option: 1 Load a Distribution
Enter a Host File: Q:\ bgu_0150.k
```

```
KIDS Distribution saved on May 26, 2005@17:27:09
Comment: IHS RPC BROKER Version 1.5 build MJL
This Distribution contains Transport Globals for the following Package(s):
BGU 1.5
Distribution OK!

Want to Continue with Load? YES// Loading Distribution...

Build BGU 1.5 has an Enviromental Check Routine
Want to RUN the Environment Check Routine? YES//
BGU 1.5
Will first run the Environment Check Routine, BGU15E


        Checking Environment for Beta Install of Version 1.5 of BGU.

              Need at least FileMan 22.....FileMan 22.0 Present

                Need at least Kernel 8.0.....Kernel 8.0 Present

                             ENVIRONMENT OK.

Has a SUCCESSFUL system backup been performed??? NO// YES Use INSTALL NAME:
BGU 1.5 to install this Distribution.

   1   Load a Distribution
   2   Verify Checksums in Transport Global
   3   Print Transport Global
   4   Compare Transport Global to Current System
   5   Backup a Transport Global
   6   Install Package(s)
       Restart Install of Package(s)
       Unload a Distribution

Select Installation Option: Install Package(s)
Select INSTALL NAME: BGU 1.5 Loaded from Distribution   Loaded
from
Distribution 5/26/05@18:00:00
   => IHS RPC BROKER Version 1.5 build MJL ;        Created on May 26,
2005@17:27:09

This Distribution was loaded on May 26, 2005@18:00:00 with header of
IHS RPC BROKER Version 1.5 build MJL    ;Created on May 26, 2005@17:27:09
   It consisted of the following Install(s):
      BGU 1.5

Checking Install for Package BGU 1.5
Will first run the Environment Check Routine, BGU15E

        Checking Environment for Beta Install of Version 1.5 of BGU.

              Need at least FileMan 22.....FileMan 22.0 Present

                Need at least Kernel 8.0.....Kernel 8.0 Present

                             ENVIRONMENT OK.

Has a SUCCESSFUL system backup been performed??? NO// YES
```

```
Install Questions for BGU 1.5

Incoming Files:

   90061  BGU TRACE
Note: You already have the 'BGU TRACE' File.

   90062  BGU SITE PARAMETERS
Note: You already have the 'BGU SITE PARAMETERS' File.

   90062.1   BGU SIGN-ON STATISTICS
Note: You already have the 'BGU SIGN-ON STATISTICS' File.

   90063  BGU SERVER
Note: You already have the 'BGU SERVER' File.

   90064  BGU TABLE
Note: You already have the 'BGU TABLE' File.

   90064.1   BGU EXECUTE CODE
Note: You already have the 'BGU EXECUTE CODE' File.

   90064.2   BGU GENLIST TEMPLATE
Note: You already have the 'BGU GENLIST TEMPLATE' File.

   90065  BGU MUMPS CODE
Note: You already have the 'BGU MUMPS CODE' File.

   90066  BGU PRESET REMOTE PROCEDURE CALL
Note: You already have the 'BGU PRESET REMOTE PROCEDURE CALL' File.

   90069  BGU USER GUI PROFILE
Note: You already have the 'BGU USER GUI PROFILE' File.

Want KIDS to Rebuild Menu Trees Upon Completion of Install? YES// NO

Want KIDS to INHIBIT LOGONs during the install? YES//

Enter the Device you want to print the Install messages. Enter a '^' to
abort the install.

DEVICE: HOME//

Install Started for BGU 1.5 :
May 26, 2005@18:00:00

Build Distribution Date: Feb 11, 2005

Installing Routines:
             May 26, 2005@18:00:00

Running Pre-Install Routine: ^BGUPRE Stop TCP Listener...
TCP Listener has been shutdown.

Installing Data Dictionaries:
             May 26, 2005@18:00:00

Installing PACKAGE COMPONENTS:

Installing SECURITY KEY
```

```
Installing REMOTE PROCEDURE

Installing OPTION
May 26, 2005@18:00:00

BGU 1.5

Running Post-Install Routine: ^BGUPOST
Should I set the BGU SITE PARAMETERS File?? Y// ES
Should I create the CLEANUP Task for the GUI Trace?? Y// ES
Should I create the STARTUP Task for the GUI Listener?? Y// ES
Should I start the listener on port 8000?? Y// ES


Start TCP Listener...
TCP Listener started successfully.

Updating Routine file...

Updating KIDS files...

BGU 1.5 Installed.
May 26, 2005@18:01:00

NO Install Message sent

-------------------------------------------------------------|


  25 50 75 100%|
-------------------------------------------------------------|


Install Complete


D. Verifing that Package is installed properly

Select Kernel Installation & Distribution System Option: utilities


     Build File Print
     Install File Print
     Convert Loaded Package for Redistribution
     Display Patches for a Package Purge Build or Install Files Rollup
     Patches into a Build Update Routine File
     Verify a Build
     Verify Package Integrity

Select Utilities Option: install  Install File Print
Select PACKAGE NAME: bgu  IHS RPC BROKER   BGU
Select VERSION: 1.5// <RET>   05-26-05
Do you want to see the Descriptions? NO// N
DEVICE: HOME// <RET>


PACKAGE: IHS RPC BROKER   May 26, 2005 8:00 pm            PAGE 1
Version #        INSTALLED             INSTALLED BY
----------------------------------------------------------------------------
VERSION: 1.5       MAY 26, 2005           LOUGHRAN,MIKE
```

```
      Build File Print
      Install File Print
      Convert Loaded Package for Redistribution
      Display Patches for a Package
      Purge Build or Install Files
      Rollup Patches into a Build Update Routine File
      Verify a Build
      Verify Package Integrity

Select Utilities Option:  install  Install File Print
Select PACKAGE NAME: IHS RPC BROKER    BGU
Select VERSION: 1.5// <RET>  05-26-05
Do you want to see the Descriptions? NO// N
DEVICE: HOME// <RET>




PACKAGE: IHS RPC BROKER   May 26, 2002 8:00 pm   PAGE 1
PATCH #   INSTALLED INSTALLED BY
-----------------------------------------------------------------------
-- VERSION: 1.5 MAY 26, 2005 LOUGHRAN,MIKE

      Build File Print
      Install File Print
      Convert Loaded Package for Redistribution
      Display Patches for a Package
      Purge Build or Install Files
      Rollup Patches into a Build
      Update Routine File
      Verify a Build
      Verify Package Integrity

Select Utilities Option: <RET>

To restart listener if you answered No to the installation prompt above:
Should I start the listener on port 8000?? Y// Y

>D ^XUP

Setting up programmer environment
Terminal Type set to: C-VT100
Select OPTION NAME: BGUMENU  IHS Remote Procedure Main Menu

   SM     Start Listener
   STP Stop Listener
   SP RPC Broker Site Parameter Enter/Edit
   STT Start Trace
   SPT Stop Trace
   CLN Clean Out Old Trace Sessions
TRAC  Display Trace Session Data

Select IHS Remote Procedure Main Menu Option: SM Start Listener
Start TCP Listener...
```

Figure 4-2: Installing the BGU RPMS server software

4.3   Starting the Listener from the Main Menu

You will only need this section if BGUTCPL has terminated because of an error or other unscheduled event.

```
D ^XUP

Setting up programmer environment

Terminal Type set to: C-VT100

Select OPTION NAME: BGUMENU   IHS RPC Main Menu

SM Start Listener
STP Stop Listener
SP RPC Broker Site Parameter Enter/Edit



STT Start Trace
SPT Stop Trace
CLN Clean Out Old Trace Sessions
TRAC Display Trace Session Data

Select IHS RPC Main Menu Option: SM Start ListenerStart TCP Listener... TCP
Listener started successfully.
```

Figure 4-3: Starting the listener from the main menu

4.4   Stopping the Listener from the Main Menu

```
D ^XUP
Setting up programmer environment

Terminal Type set to: C-VT100

Select OPTION NAME: BGUMENU   IHS RPC Main Menu
SM Start Listener
STP Stop Listener
SP RPC Broker Site Parameter Enter/Edit
STT Start Trace
SPT Stop Trace
CLN Clean Out Old Trace Sessions
TRAC Display Trace Session Data

Select IHS RPC Main Menu Option: STP    Stop ListenerStop TCP Listener...
TCP Listener has been shutdown.
```

Figure 4-4: Stopping the listener from the main menu

4.5   System Status Check For Listener

To check system status from programmer mode for an active listener, you should look for a process running with a name of **BGUTCPL**. If you also find a process running with a program name of **BGUTCPH** then a client is currently connected to the server. An example of running system status is listed below: (You can also type SS at the programmer prompt to run a system status on some M platforms like MSM).

```
>D ^%SS<>

         MSM - System Job Status
         26-MAY-05 8:34 PM

Max Partitions: 65     Current in Use: 15

JOB       UCI/VOL   ROUTINE   P-SIZE      STATUS    #-COMMANDS          DEVICES
NUM       NAME      NAME      CURR/MAX              TOTAL/INCR          OWNED
----- -------   --------   --------      --------- ----------    -------
1                   * * *    M S M * * *
3+        MGR,RES   DDPSRV    1.2/100     DDP       319/54
4+        MGR,RES   DDPSRV    0.8/100     DDP       785/175
10        MGR,AAA   %ZTM      2.4/100     Hang      420893/420893
11        MGR,RES   %ZTM      4.3/100     Hang      142001/142001
12        MGR,DEV   %ZTM      6.8/100     Hang      157992/157992
13+       RES,RES   %ZTMS     1 4.0/100 Hang        351371/351371
14+       APD,DEV   %ZTMS     1 12.9/100Hang        1566589/1566589
52        APD,AAA   MSMSHELL  1.7/100     TermI-130 454667/71        130pc
53        APD,AAA   %GSEL     2.7/100     TermI-128 2954/226         128pc
54        MGR,RES   %SS       1.8/100     Running   18037039/0       132pc
56        APD,AAA   %EDF1     4.0/100     TermI-129 170373/10        129pc
58        APD,AAA   BGUTCPH   8.7/100     Muserver  10127/10127      <-Handler
59        APD,AAA   %EDF      4.8/100     TermI-131 32915/259        131pc
62        APD,AAA   BGUTCPL   2.3/100     Muserver  29/29            <-Listener
Enter <RETURN> to continue, '^' to quit

p - Principal Device c - Current Device

Total Buffers In System: 29352, Modified#=1
Disk Cache Efficiency: 99.6%
```

Figure 4-5: System status check for listener

5.0   Troubleshooting/FAQs

5.1   KIDS Installation Failed

Q: The Kids installation fails on the server. Any suggestions?

A: If you scroll back through the display you will see one of three reasons for the install failing.

> You have not installed XB Patch 8. The environmental check looks to see if the XBLM routine has an *8 in line 4 of the routine. XBLM is required to prevent run away journal space use in Unix RPMS sites.

5.2   GUI Application Will Not Connect to the Server

Q: I have assigned all of the applicable client application Security Keys to myself and still cannot use the application. There is a message on the Client Screen that says:

```
YOU DON'T POSSESS THE PROPER KEY FOR THIS PROGRAM! SEE YOUR SYSTEM MANAGER.
```

I have all of the keys. What is wrong?

A: You should have a MODER or a WRITE error in your RPMS error trap indicating that Device 56 (|TCP| in Caché) is not defined. Sites that have recently converted from UNIX to Windows NT/2000 do not have a Device 56 defined in their DEVICE File in RPMS. This definition is also used for Network MailMan and HL7 Messaging. You can check to see if you have one defined by going into Inquiry of FileMan. If not defined, see the Enter/Edit example below and create a new DEVICE. You should now be able to use the client application.

For MUMPS: Inquiry for DEVICE 56 using FileMan

```
VA FileMan 22.0
Select OPTION: INQUIRE TO FILE ENTRIES
OUTPUT FROM WHAT FILE: DEVICE// <RET>
Select DEVICE NAME: TCP/IP DEVICE    DEV 56 56 DEV
ANOTHER ONE:
STANDARD CAPTIONED OUTPUT? Yes// <RET> (Yes)
Include COMPUTED fields:  (N/Y/R/B): NO//<RET> - No record number (IEN), no
Computed Fields

NAME: TCP/IP DEVICE $I: 56
ASK DEVICE: NO   ASK PARAMETERS: NO
VOLUME SET(CPU): DEV   SIGN-ON/SYSTEM DEVICE: NO
LOCATION OF TERMINAL: DEV 56 SUBTYPE: C-VT100



TYPE: TERMINAL
```

```
Select DEVICE NAME
```

For MUMPS: Adding a new DEVICE 56 entry using FileMan

```
VA FileMan 22.0

Select OPTION: ENTER OR EDIT FILE ENTRIES

INPUT TO WHAT FILE: OPTION// DEVICE (73 entries)
EDIT WHICH FIELD: ALL// <RET>
Select DEVICE NAME: <RET>

NAME: TCP/IP DEVICE// <RET>
LOCATION OF TERMINAL: TCP Device 56// <RET>
Select MNEMONIC: <RET>
LOCAL SYNONYM: <RET>
```

Enter the name of your facility volume group

```
$I: 56// <RET>
VOLUME SET(CPU): DEV//


SIGN-ON/SYSTEM DEVICE: NO// <RET>
TYPE: TERMINAL// <RET>
SUBTYPE: C-VT100// <RET>
ASK DEVICE: YES// <RET>
ASK PARAMETERS: NO// <RET>
ASK HOST FILE: ^

Select DEVICE NAME:
```

For CACHE: Inquiry for DEVICE TCP using FileMan

```
Select OPTION: INQUIRE TO FILE ENTRIES
OUTPUT FROM WHAT FILE: KERNEL SYSTEM PARAMETERS// DEVICE Select DEVICE
NAME: TCP-IP TCP/IP |TCP|  DEMO ANOTHER ONE:
STANDARD CAPTIONED OUTPUT? Yes// (Yes)
Include COMPUTED fields:  (N/Y/R/B): NO//  - No record number (IEN), no
Computes

NAME: TCP-IP $I: |TCP|
ASK DEVICE: NO   ASK PARAMETERS: NO
VOLUME SET(CPU): DEMO  SIGN-ON/SYSTEM DEVICE: NO
LOCATION OF TERMINAL: TCP/IP  SUBTYPE: C-OTHER
TYPE: VIRTUAL TERMINAL
```

For CACHE: Adding a new DEVICE TCP entry using FileMan

```
INPUT TO WHAT FILE: DEVICE// <RET> EDIT WHICH FIELD: ALL// <RET>



Select DEVICE NAME: TCP-IP
Are you adding ' TCP-IP' as a new DEVICE (the 120TH)? No// Y   (Yes)
DEVICE LOCATION OF TERMINAL: TCP/IP
LOCATION OF TERMINAL: TCP/IP// <RET> Select MNEMONIC: <RET>
```

```
LOCAL SYNONYM: <RET>
$I: |TCP|// <RET>
VOLUME SET(CPU): <RET>
SIGN-ON/SYSTEM DEVICE: YES// <RET>
TYPE: VIRTUAL TERMINAL// <RET>
SUBTYPE: C-OTHER// <RET>
ASK DEVICE: NO// <RET>
ASK PARAMETERS: NO// <RET> ASK HOST FILE: <RET>
ASK HFS I/O OPERATION: <RET> QUEUING: <RET>
OUT-OF-SERVICE DATE: ^
```

Contact Information

If you have any questions or comments regarding this distribution, please contact the OIT Help Desk (IHS).

Phone: (505) 248-4371 or (888) 830-7280 (toll free)

Fax: (505) 248-4363

Web: http://www.ihs.gov/GeneralWeb/HelpCenter/Helpdesk/index.cfm

Email: support@ihs.gov