



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
Albuquerque, New Mexico

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:

1. A brief description of the client server process
2. An overview of the programs/files included with the program
3. Instructions for installing the RPC Broker on the server

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1.0 Release Notes

The IHS RPC BROKER package provides the underlying service and utilities used 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 server is handled using TCP/IP. Both the client and the server must have TCP/IP-aware software installed.

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

1. **Client Application Software:** This is an executable program. This application sends or receives data from the server using the interface component described below and provides the user's interface to the data it receives.
2. **Client Interface Software:** This software resides on the client in the form of 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.
3. **RPMS Server Software:** (BGU name spaced routines). This server software is the MUMPS (M) code that receives the messages from the interface, formats the messages 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 Content 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

- 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 sysgen 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:\bg_u_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. Verifying 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 12.9/100	Hang	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.

1. 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>

\$I: 56// <RET>

VOLUME SET(CPU): DEV// ← Enter the name of your facility volume group

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>
QUEUEING: <RET>
OUT-OF-SERVICE DATE: ^
```

6.0 Contact Information

If you have any questions or comments regarding this distribution, please contact the ITSC Help Desk by:

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

Fax: (505) 248-4363

Web: <http://www.rpms.ihs.gov/TechSupp.asp>

Email: ITSCHelp@mail.ihs.gov