



## Automatic Partition Resource Manager – APRM<sup>®</sup>

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### Highlights

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- Automatic, continuous balancing of processing resources to maximize IBM<sup>®</sup> iSeries<sup>™</sup> performance
  - Quick, simple configuration of tuning rules
  - Requisite processing resource movement occurs without operator intervention
  - Efficient use of processing resources among partitions
  - Constant monitoring and reporting of partition workload(s)
  - Simple CL command interface to move IOPs (e.g., tape drives or CD ROM drives) between partitions
  - Historical view of processing resource demand and movement available for analysis
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### What is APRM?

The iSeries Server (previously known as the AS/400) is a unique computer system that can easily be used by small businesses, with little or no experience, or installed at a business where hundreds, or even thousands, of users will use the system.

Recent versions of the operating system (OS/400) include the ability to consolidate servers through the use of logical partitions (LPAR). LPAR allows one physical server to be configured to operate as if it were two or more servers. In most cases, logical partitions are used to define several smaller virtual systems from one large iSeries system. Configuration of LPAR includes defining the number of

processors, amount of memory, and amount of interactive CPW (Commercial Processing Workload) to be assigned to each partition. These three resources, taken together, are referred to as "processing resources."

Consider the following: with V4R4 and V4R5, the movement of processing resources required a partition restart (IPL) to activate the changes. In addition, an experienced technician was required to handle LPAR configuration changes. This combination of finding time to IPL and the need for an experienced operator made regular LPAR changes impractical. With V5R1, these movements can be made dynamically without an IPL.

With V5R1 (and the appropriate version of hardware), IBM has expanded LPAR capabilities to much smaller systems via the ability to share one or more processors among multiple partitions. This ability to reallocate LPAR resources dynamically also enhances LPAR's appeal; with this capability, customers can use LPAR to manage varying workloads for different partitions. For example, a partition for East Coast locations could be allocated more processing resources early in the morning (before business hours on the West Coast), while a partition used by West Coast locations could be given additional processing resources later in the day.

Managing the configuration to ensure acceptable performance within each partition, throughout the day, can be overwhelming. In other words, shops demanding maximum processing power are

spending valuable time manually balancing processing resources across partitions.

APRM is an iSeries Server application that dynamically monitors and adjusts processing resources among designated partitions. Resource movement occurs when APRM detects high levels of "resource needs" within any partition and, at the same time, detects the availability of processing resources available in other partitions.

APRM obtains the levels of authority required to operate without compromising your overall system security.

### APRM Architecture

Managing CPU, interactive CPU, and memory resources, as well as moving IOPs among iSeries partitions has the potential to dominate your system operator's time. Not only does APRM provide the quickest and simplest path to automatically manage your processing resources in an LPAR environment it is based on a superior technology foundation, with six patents pending!

How does APRM eliminate the need to manually move CPU, interactive, memory among partitions? The APRM Tuner gathers workload statistics from each partition using the APRM partition Agent and APRM Agent handlers. The Tuner continuously evaluates workload statistics using complex algorithms that determine either processing resource excess or inadequacy of actively tuned partitions.

All communication between primary and secondary partitions is

accomplished using TCP/IP. If transmission security is a priority at your company, these links can be defined using SSL.

APRM includes an OS/400-based tool that allows users to manually or programmatically move hardware (e.g., tape drives or CD-ROM drives) from one partition to

another.

Management of the APRM environment is very flexible. Users can manage all aspects of the product through their choice of environments: Operations Navigator plug-in, OS/400-based utility, or via OS/400 commands.

Finally, APRM provides the ability to extract, chart, and analyze the performance improvements gained through the use of dynamic movement of processing resources.

## System Requirements

### Hardware

- Any iSeries server configured with a minimum of two logical partitions.
- Approximately 50 MB of storage at installation time. The software will create journal receivers that will, over time, increase APRM storage requirements.
- Minimal processing resources are required for operation. APRM will function on any partition configured using IBM's LPAR guidelines.

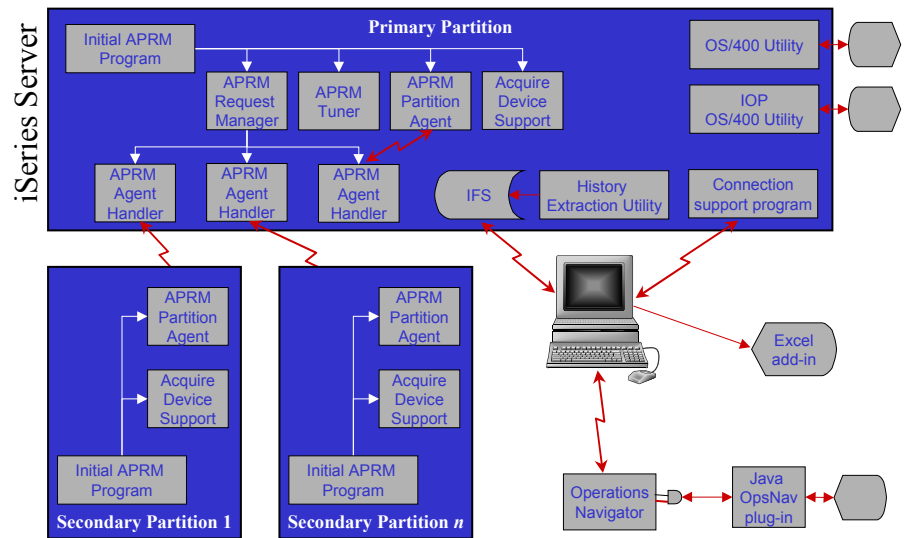
### Software - Primary Partition

- The primary partition must be operating at V5R1 or later.
- Refer to <http://www.barsaconsulting.com> for current list of required PTFs.
- It is recommended that a recent cumulative PTF package be applied on the primary partition. However, at a minimum, all LPAR PTFs must be applied to your system. Refer to the IBM LPAR web site, <http://www-1.ibm.com/servers/eserver/iseries/lpar/>, for a current list of PTFs.
- The "Service Tool Server" feature of OS/400 must be running in the primary partition.

### Software - Secondary Partition(s)

- Automatic tuning is only available for OS/400 partitions operating at V5R1 or later.
- It is recommended that a recent cumulative PTF package be applied on the secondary partition. However, at a minimum, all LPAR PTFs must be applied to your system. Refer to the IBM LPAR web site, <http://www-1.ibm.com/servers/eserver/iseries/lpar/>, for a current list of PTFs.

Figure 1: APRM Architecture



- Secondary partition(s) for which you want APRM to report workload statistics must be at V4R5 or later.
- Those partitions that are configured as LINUX or "Guest" partition(s) appear as an active system partition to APRM but will not be tuned nor can they provide workload statistics.

### APRM Plug-in for Operations Navigator

- Client Access Express, V5R1, service pack SI01907 or later.
- The Operations Navigator component of Client Access Express.
- The Configuration and Service component of Operations Navigator.

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