



ACTIVATE BUSINESS WITH THE POWER OF I.T.™



Scalability and BMC Remedy Action Request System

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Introduction

This paper will discuss how BMC® Remedy® Action Request System® (AR System®) can scale within an enterprise environment and how, by combining additional hardware resources with some of the scaling features of BMC Remedy AR System, you can create a truly world-wide enterprise application.

BMC Remedy AR System has been designed to scale to the limits of its central processing unit (CPU), memory, and disk sub-system configurations. This paper focuses on those features that can help make BMC Remedy AR System scale as application demand, or breadth of applications, increases in an organization. It presents adjustments that can be made from a hardware perspective to help make the system scale, as well as features built into BMC Remedy AR System to allow it to scale with system hardware.

BMC Remedy AR System architecture

BMC Remedy AR System is divided into four simple layers: Client Tier, Mid-Tier, Server Tier, and Data Tier. For each tier, we will address a couple of manners in which BMC Remedy AR System addresses the issue of scalability.

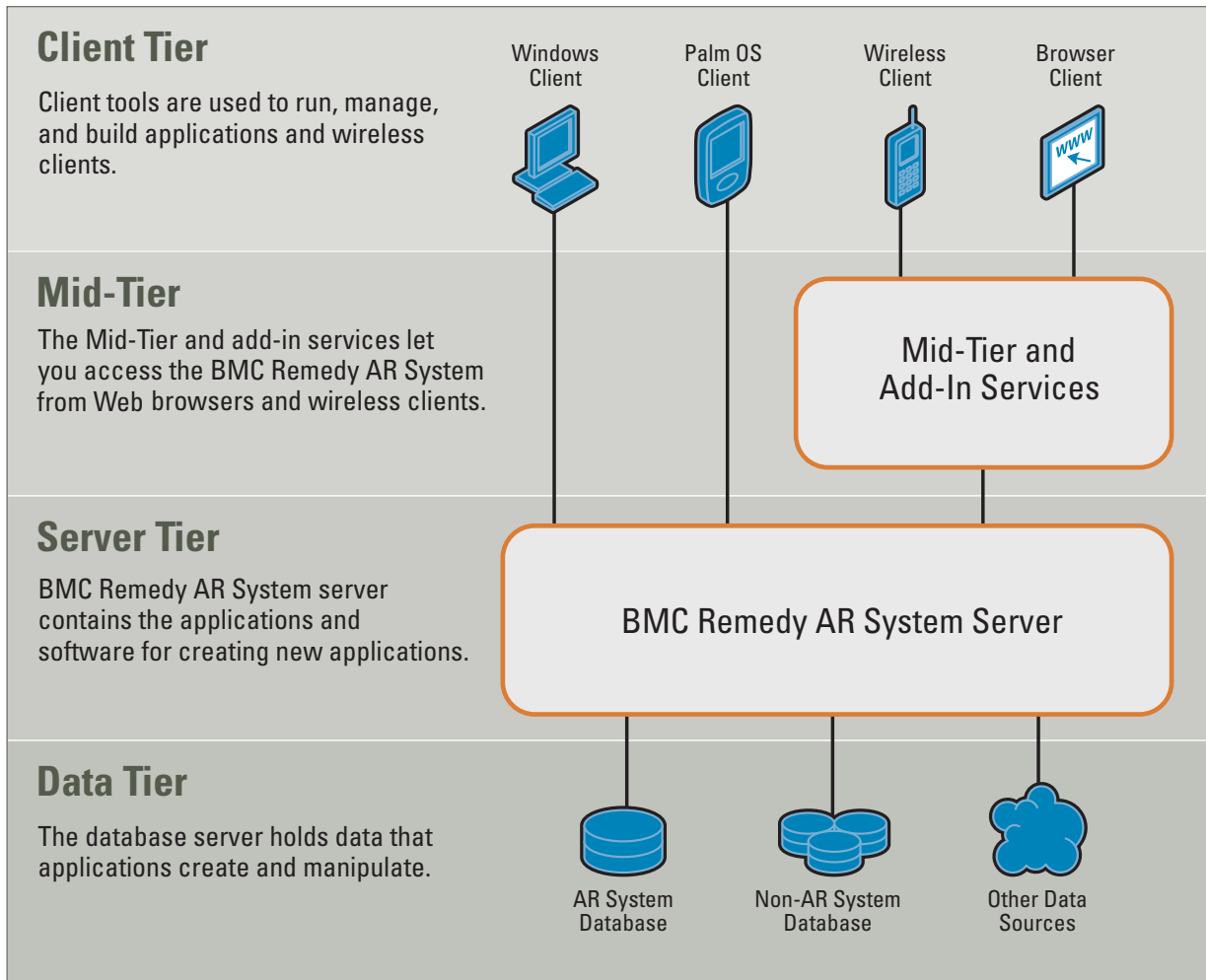


Figure 1.

BMC Remedy AR System Tier definitions

Client Tier

The Client Tier is the presentation layer that provides the user interface and user interaction aspects of the product. Most clients are for end-user interaction, but the tools for system administration are also clients. Clients can run within a Web browser, on Windows, on Palm OS devices, on wireless devices such as cell phones, and in other environments as well. Regardless of the type of client, BMC Remedy AR System will support the client platform you choose.

Mid-Tier

The Mid-Tier provides components and add-in services that run on a Web server, enabling you to deploy your applications on the Web. Together, the Mid-Tier and the Server Tier handle the processing of business rules. The Mid-Tier translates browser requests, communicates with the BMC Remedy AR System Server, and generates a response for the browser. When operating in a wireless or Web-enabled environment, the BMC Remedy AR System Mid-Tier architecture will allow you to scale to many users by adding additional Mid-Tier servers.

Server Tier

The Server Tier contains the BMC Remedy AR System Server, which controls both workflow processes and access to the other data sources in the Data Tier.

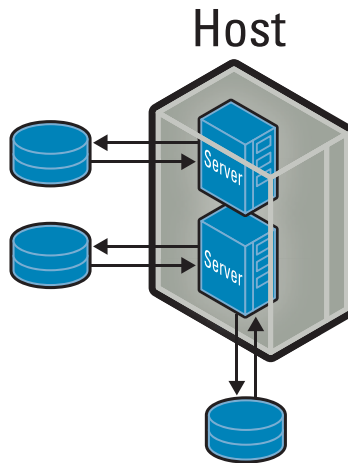


Figure 2.

The ability of multiple BMC Remedy AR System Servers to exist on a single host machine aids greatly in scalability. This capability enables mutually exclusive groups of users to access separate BMC Remedy AR System Servers on a single host machine. It also allows Managed Service Providers (MSPs) to provide BMC Remedy AR System applications to specific customers.

Hosting multiple BMC Remedy AR System Servers in a single physical server with a load balancer can also be used to more efficiently use server resources for scalability. More concurrent users can be hosted effectively on a single server with multiple BMC Remedy AR System Servers than on just a single BMC Remedy AR System Server. An organization might also use this functionality to host both a Development and Test environment on a single server, eliminating the need to purchase additional hardware.

Data Tier

The Data Tier contains database servers and other data sources that can be accessed by the BMC Remedy AR System Server. The database server acts as the data storage and retrieval engine.

BMC Remedy AR System allows you to have multiple servers accessing the same database. An advantage is that this capability enables multiple servers to access multiple applications from a sample high-performance database sharing the same data. It provides a single point of database management. It also allows for easy backup and replication at the database level, and increases scalability by increasing the bandwidth applied to a single data set.

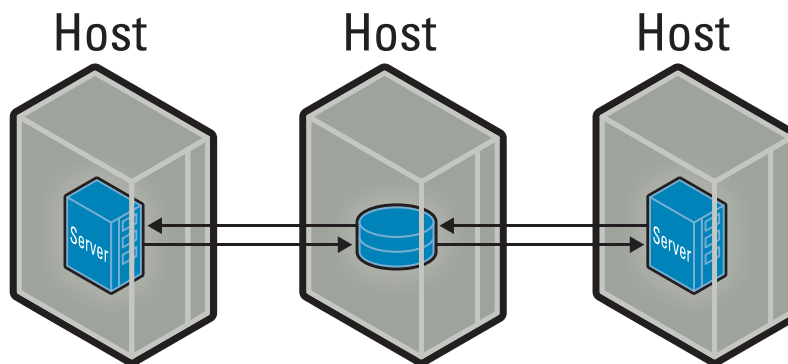


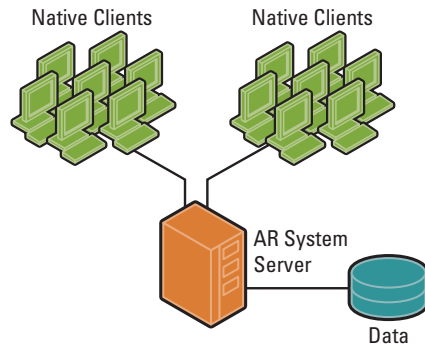
Figure 3.

Scalability approaches

There are several approaches to scaling BMC Remedy AR System by utilizing the capabilities available within each tier. Let's take a look at some of the various hardware configurations that you can use to scale BMC Remedy AR System.

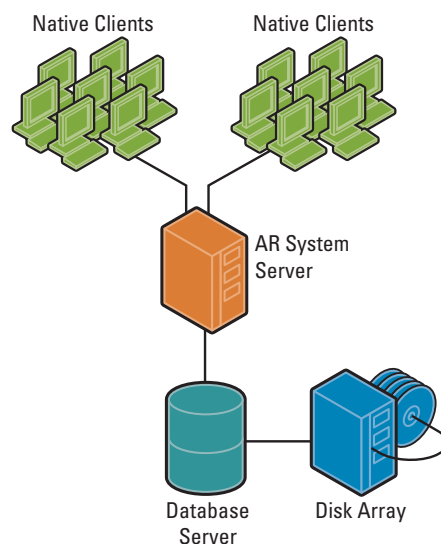
Scenario 1

This scenario shows the BMC Remedy AR System Server housed on the same machine as the Database Management System (DBMS). This is the starting point for many BMC Remedy AR System implementations.



Scenario 2

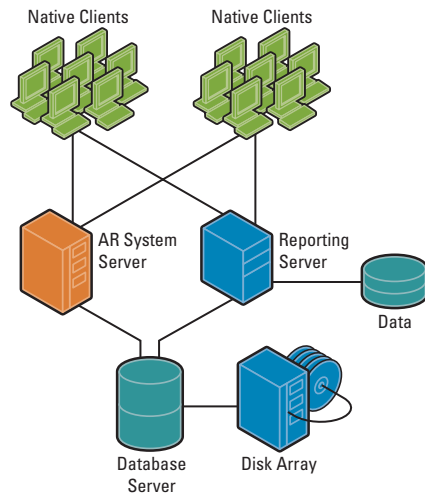
As the number of online users increases, and additional demands are placed upon the BMC Remedy AR System Server and the database, the BMC Remedy AR System architecture allows you to address the challenge by physically implementing the various tiers of BMC Remedy AR System on separate physical servers. The BMC Remedy AR System architecture allows you to dedicate different machines for the Server Tier layer (BMC Remedy AR System) and the Data Tier (DBMS). By doing so, you can increase total system resources, thereby increasing overall performance. Additionally, you can add a Disk Array to further increase throughput at the database level.



Scenario 3

As users begin to utilize BMC Remedy AR System even more, the demand for reporting data will increase. By creating predefined rules, the BMC Remedy AR System administrator can set the rules to automatically move closed or non-critical tickets off your main forms and into archive forms.

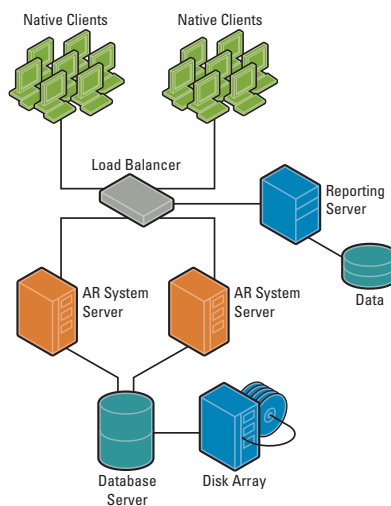
By creating a report server, you can offload the reporting process to a separate server and allow the application server's processing power to focus on the needs of the online, customer-focused users. By putting the reporting server on a completely different database and utilizing BMC® Remedy® Distributed Server Option to transfer all tickets to this server, you can achieve additional performance. As your data grows, this server can also act as an archival/reporting server.



Scenario 4

As usage of an application grows, so do user dependency, response time, and application availability requirements. These requirements may begin to exceed the capabilities of a single Application Server. BMC Remedy AR System allows multiple BMC Remedy AR System Application Servers to access a single BMC Remedy AR System database. This configuration is referred to as a Server Group.

There are several advantages to having multiple BMC Remedy AR System Servers configured as a Server Group. This functionality allows the systems to be used in a load-balanced/highly available environment. By utilizing a load balancer, you are able to distribute your users evenly across multiple Application Servers, while still accessing a single database. Should a BMC Remedy AR System Server within the Server Group become unavailable, users can be automatically connected to another BMC Remedy AR System Server. BMC Remedy AR System Servers within a Server Group can be configured to allow for the automatic fail-over and return of any operations managed by the use of those licenses. Finally, if the organization should experience a large influx of users, you can address their immediate needs by adding another BMC Remedy AR System Server to the Server Group instead of going out and buying a bigger piece of hardware and doing a wholesale upgrade.

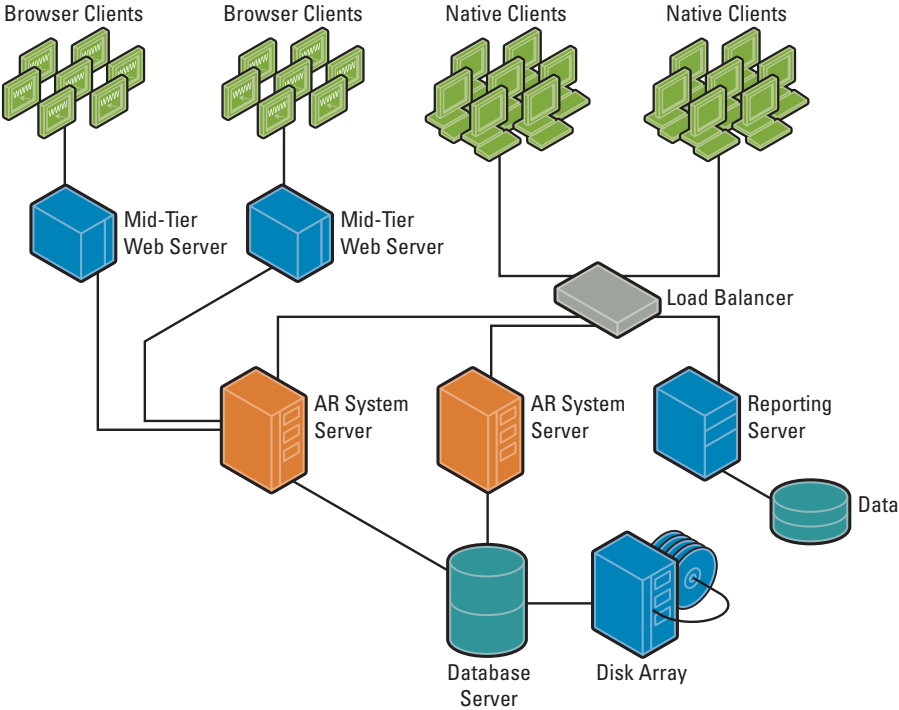


Scaling the Mid-Tier

As your organization continues to grow, you will need to address the needs of the remote browser-based user.

Scenario 5

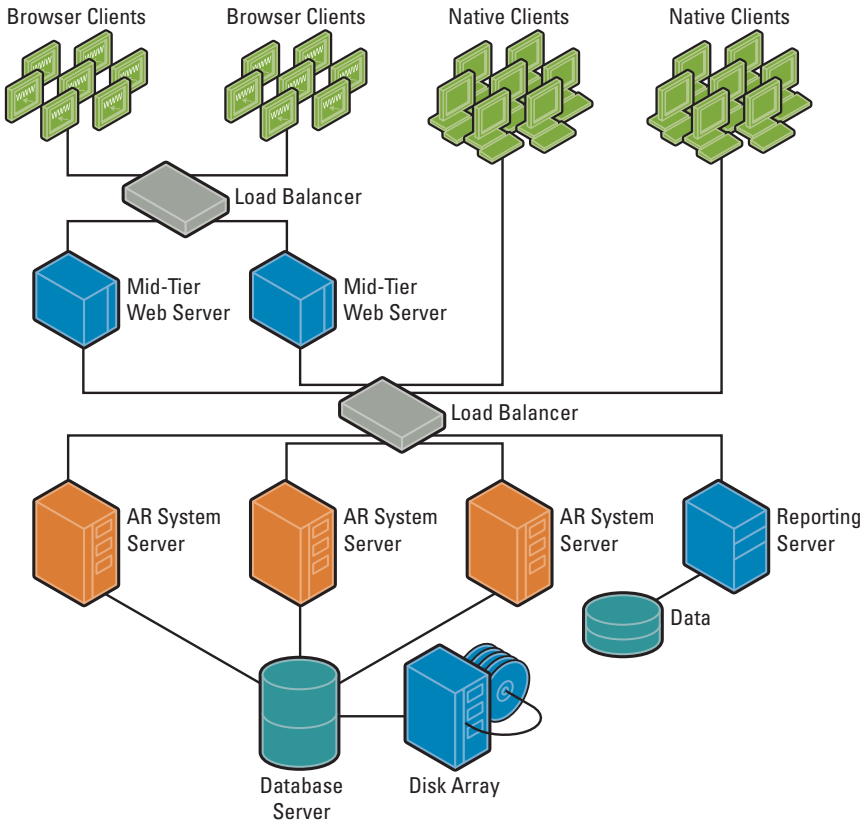
Mid-Tier processes are off-loaded to a separate server, increasing total system resources, and by extension increasing overall performance. As additional browser-based users are added, more Mid-Tier Web Servers can be introduced, as necessary. Mid-Tier Servers can connect to more than one BMC Remedy AR System working with one BMC Remedy AR System Server, or have a single Mid-Tier working with multiple BMC Remedy AR System Servers. You can also have multiple Mid-Tier Servers working with multiple BMC Remedy AR System Servers.



BMC Remedy AR System Servers and Load Balancing

Scenario 6

By utilizing Load Balancing hardware, you can architect a fast-response, highly reliable system that is capable of supporting many users — regardless of how they access the system. As more users are added, more servers can be introduced to support the added transactions. Due to the openness of the BMC Remedy AR System architecture, the system can be configured to work in conjunction with various vendors' Load Balancing systems, such as Oracle RAC. In a configuration such as this, database performance can be quickly improved by adding another machine to the Oracle RAC cluster.



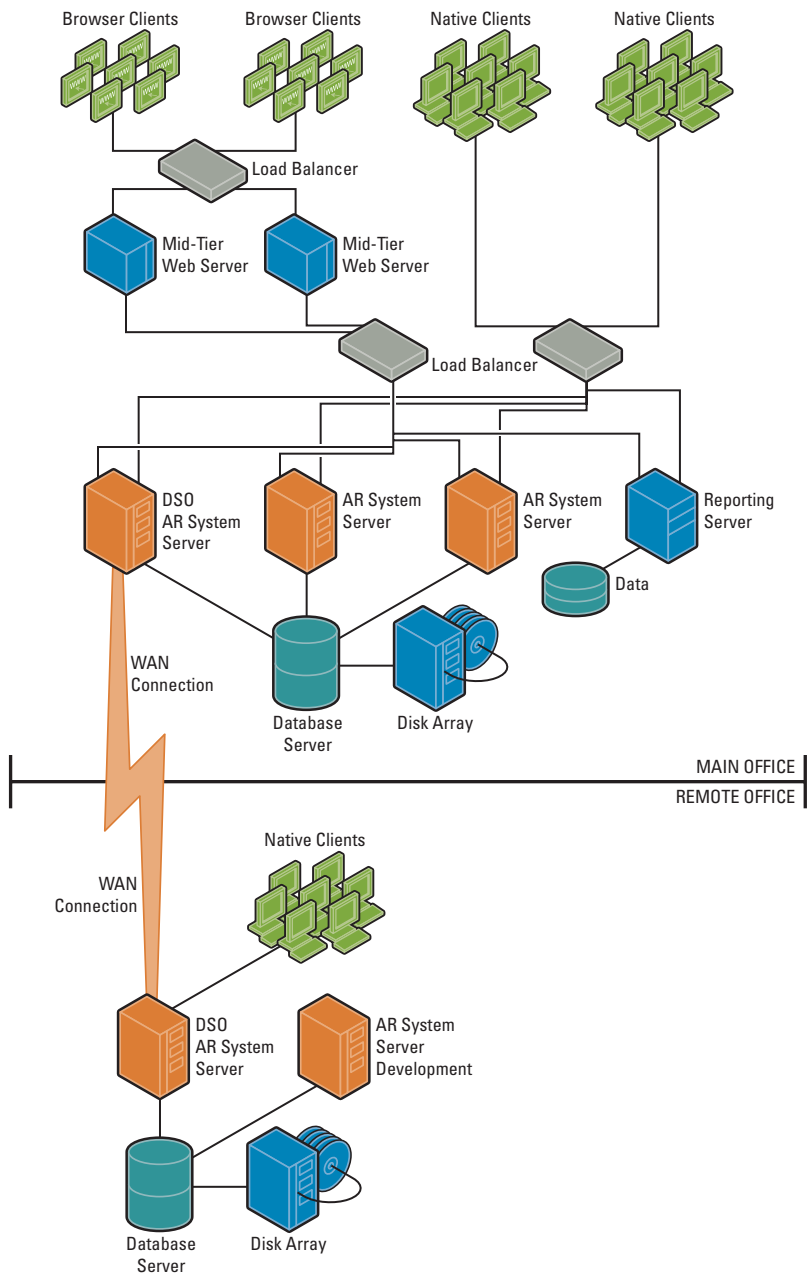
BMC Remedy Distributed Server Option

Changes in an organization can come through growth or functionality. The BMC Remedy Distributed Server Option allows BMC Remedy AR System to scale across a worldwide organization by synchronizing requests across multiple, geographically dispersed servers. Some of the applications for BMC Remedy Distributed Server Option include functionality that:

- > Transfers requests over a WAN to a location where they can be processed, or to the person who could process them, even in a global environment
- > Transfers requests between regions in a 24x7 customer support environment
- > Creates a distributed knowledge base, so that solutions to common problems are available at all locations worldwide

Scenario 7

By utilizing BMC Remedy Distributed Server Option, you can allow remote office users to have equal access to BMC Remedy AR System applications and information available to the main office users.



Conclusion

BMC Remedy AR System has been designed to make it easy to adapt and scale to the limits of hardware resources. With features such as Server Groups, Load Balancing, BMC Remedy Distributed Server Option, and multiple database support, BMC Remedy AR System is able to scale with your worldwide system resources. As a result, it will never be considered the cause of a system degradation.

No matter how many resources are given to a particular implementation, if the system is not tuned to allow the software and hardware to best utilize each other's resources, it will never be able to perform at its highest levels. BMC Remedy AR System will adjust to any hardware configuration and best utilize the resources to which it has been assigned.

For more information about BMC Remedy AR System, please visit www.bmc.com.



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