Brocade Application Resource Broker

**HIGHLIGHTS**

- Dynamically provision application and network resources within heterogeneous virtual environments in response to changes in application demand
- Increase visibility and control over the entire application infrastructure with customized provisioning policies, health monitoring, and application performance metrics
- Seamlessly integrate with custom applications and open orchestration environments via RESTful Application Programming Interfaces (APIs) and open-standard messaging protocol
- Enable cloud bursting as a hybrid cloud service by allowing a local data center to leverage remote resources in the cloud when demand for capacity spikes
- Enable business continuity while ensuring an undisrupted application experience for end users

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**Dynamic Resource Provisioning in the Virtualized Data Center with Brocade Application Resource Broker**

*Managing Resources in a Virtualized Data Center*

Managing data center resources and utilizing them effectively while preserving application performance Service Level Agreements (SLAs) are a key objective for any virtual environment. Other challenges include heterogeneity of host systems, lack of integration between the network and virtual machine (VM) resources, and limited visibility to user demands and application behaviors. Interdependencies must exist between the virtual machine host, the application, the network, and the management systems to exchange communication and apply the best policies for facilitating the changing workload.

*Dynamic Application Resource Provisioning*

Dynamic automated provisioning—the ability to automatically spin up new instances of application resources as workload conditions demand—is a key requirement for fully realizing the benefits of a virtualized data center. To accommodate an elastic environment such as this, the supporting application delivery services within it must also adapt. Ideally, the goal is not only to provision and de-provision virtual machines or simply move applications and data around, but to actively monitor and direct traffic while dynamically managing network resources. When a layer of network services cannot change as rapidly as the resources behind it, it makes the data center vulnerable to critical failures.
In order to control this virtualized data center, service provider and enterprise organizations need to know how their applications are performing, how their applications are being delivered, and how traffic is being controlled and directed to the available resources. Brocade® Application Resource Broker and Brocade ADX® Application Delivery Switches enable the automation, migration, and scaling of cloud-based applications while increasing visibility across the network and application delivery tier. Brocade Application Resource Broker combines the application management intelligence of the Brocade ADX Series with a scalable policy engine to automate application resource provisioning and management of infrastructure resources.

Together, Brocade Application Resource Broker and the Brocade ADX Series increase data center availability and drive service innovation through automated, self-service provisioning models that quickly adapt to changing conditions based on infrastructure performance, application need, and user demand.

Brocade Application Resource Broker

Brocade Application Resource Broker is an infrastructure software component that simplifies the on-demand provisioning of application and network resources within a virtualized data center. This functionality ensures optimal application performance by dynamically adding and removing application resources as demand requires. Brocade Application Resource Broker works in tandem with the Brocade ADX Series to provide these capabilities through real-time changes in traffic demand, application response time, traffic load information, and infrastructure capacity information from both server and network infrastructures. As demand reaches the configured threshold for an application, Brocade Application Resource Broker initiates provisioning actions to ensure that the appropriate networking resources are available to meet the defined SLAs (see Figures 1a through 1b).

As a broker, the software functionality is available as a tightly integrated plugin to VMware vSphere Client and as a standalone application that can accommodate heterogeneous virtual environments that include VMware, XenServer, and Microsoft Hyper-V.

Cloud Bursting Use Case

Brocade Application Resource Broker builds on the strength of its dynamic resource provisioning capability to enable cloud bursting as a hybrid cloud service. Organizations can now burst their local resources footprint to a remote virtualized data center that is either public or private, when demand for computing capacity spikes. Initially, the administrator assigns a burst pool and sets up the relevant rules that govern when to start adding VMs and when to expand the connection to the new resource pool under specified conditions. As the application load increases, Brocade Application Resource Broker activates the burst pool, signaling the network to distribute the traffic within the available resources. Finally, as the demand subsides, the resources from the burst pool are removed. The advantage of this

Figure 1a: Brocade Application Resource Broker initiates provisioning and immediate use of additional application resources to meet workload demand.

Figure 1b: Brocade Application Resource Broker initiates de-provisioning and exclusion of the application resources from use as traffic demand subsides.
hybrid cloud model is that an organization pays for extra compute resources only when they are needed, thus reducing the overall cost of cloud service delivery (see Figure 2).

**Business Continuity Use Case**
Brocade Application Resource Broker also plays a key role in business continuity and disaster avoidance by enabling the seamless redirection of both new and active users when moving VMs between data centers. Brocade Application Resource Broker learns about the VM migration in real time through its integration with VMware vCenter. It then notifies the Brocade ADX device, which in turn remaps the Virtual IP (VIP) to the secondary data center and redirects client requests to the new pool of servers on which the migrated VM resources now reside. This workflow is automated by the Brocade Application Resource Broker to ensure an undisrupted end-user experience whenever an application mobility event occurs across data centers (see Figure 3).

**Key Features and Benefits**
Brocade Application Resource Broker delivers the following key features to support the diverse requirements of core cloud use cases:

- **Simplified Administration**
  - **Automatic device discovery** allows quick detection and registration of any newly added Brocade ADX devices on the network, to participate in the elastic application provisioning of Brocade Application Resource Broker

- **Greater Flexibility in On-Demand Resource Provisioning**
  - A policy-based decision engine compares application performance with preconfigured rules and alerts administrators to potentially inadequate application resources
  - Compound rules and custom actions enable the creation of customized policies in the provisioning process and provide the ultimate flexibility in handling unique infrastructure management needs
  - **Virtual Machine cloning** enables the creation of VMs by cloning a template VM in the VM manager, assigning the cloned VMs to the designated resource pool, and shutting down VMs to avoid unnecessary consumption

- **Advanced Monitoring and Reporting for Resource Management**
  - **Infrastructure-wide performance monitoring** gathers application response times, traffic loads, historical device reporting, and application configurations from Brocade ADX

> **Figure 2**: Brocade Application Resource Broker enabling cloud bursting as a hybrid cloud service.

> **Figure 3**: Brocade Application Resource Broker enabling business continuity through application mobility across data centers.
Brocade ADX Application Delivery Switches

Brocade ADX application delivery switches provide industry-leading Layer 4 through Layer 7 switching performance, enabling highly secure and scalable application service infrastructures. The switches efficiently distribute unified application services by measuring server utilization and connection load in real time, providing visibility and manageability of application performance, security, and service delivery. As a result, applications run more efficiently and with higher availability—streamlining operations, increasing business agility, significantly reducing costs, and helping organizations maximize growth. Whether an organization requires a dedicated hardware, hardware-based multitenancy system, or virtual platform, the Brocade ADX Series provides a comprehensive application delivery portfolio.

The Brocade ADX Series is used by the world’s most demanding service provider networks and enterprise data centers. With the Brocade ADX Series, these organizations gain a highly scalable and carrier-grade platform designed to ensure the cost-effective, reliable delivery of cloud services and maximum Return on Investment (ROI).

To learn more, visit www.brocade.com/adx.

Standards-Based Orchestration for Tighter Integration with the Cloud Environment

• The REST-based Application Programming Interface (API) enables the automated management of Brocade Application Resource Broker functionalities in a RESTful manner using custom and third-party management or orchestration tools.

• The message bus integration via an open standard messaging protocol, AMQP (Advanced Messaging Queuing Protocol), enables a highly scalable and extensible event-based communication across a range of modern custom applications, making Brocade Application Resource Broker ideal to scale and operate in a widely distributed cloud environment.

Partnering for Success

Brocade partners with companies of all sizes to deliver innovative solutions that help organizations maximize the value of their most critical information. To learn more, visit www.brocade.com/alliance.

About Brocade

From enterprise data centers to the service provider core, Brocade develops comprehensive end-to-end networking solutions that connect the world’s critical information. Delivered directly and through global partners, these solutions help today’s service-driven organizations operate more efficiently and maximize the business value of their data center infrastructure.

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