

Aqua Connect Load Balancer  
User Manual (Mac)



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## **About Aqua Connect Load Balancer**

The Aqua Connect Load Balancer allows organizations to harness the power of multiple servers for their Aqua Connect Remote Desktop Services (ACRDS) deployment. Organizations can set up multiple servers with the Aqua Connect Load Balancer in such a way that a new connection will be routed to the server with the most available resources. The Load Balancer will appear invisible to the end user as the user will only connect to the Load Balancer and it will handle the connections to the individual Aqua Connect Servers without the knowledge or intervention by the end user.

It can turn any modern Mac OS X device into a Mac Remote Desktop Server load balancer. The load balancer distributes the client load up to any number of Aqua Connect Servers, which will provide for optimal resource utilization and increase reliability through redundancy and failover. Additionally, the Aqua Connect Load Balancer can greatly enhance network security by being an outward facing service allowing for a single TCP/IP address and port to be used for all incoming remote desktop services clients.

# System Requirements

## Hardware

- Intel based Xserve, Mac Pro or Mac mini server
- 2 GB of memory minimum for Operating System
- 500 MB of available disk space on system volume

## Software

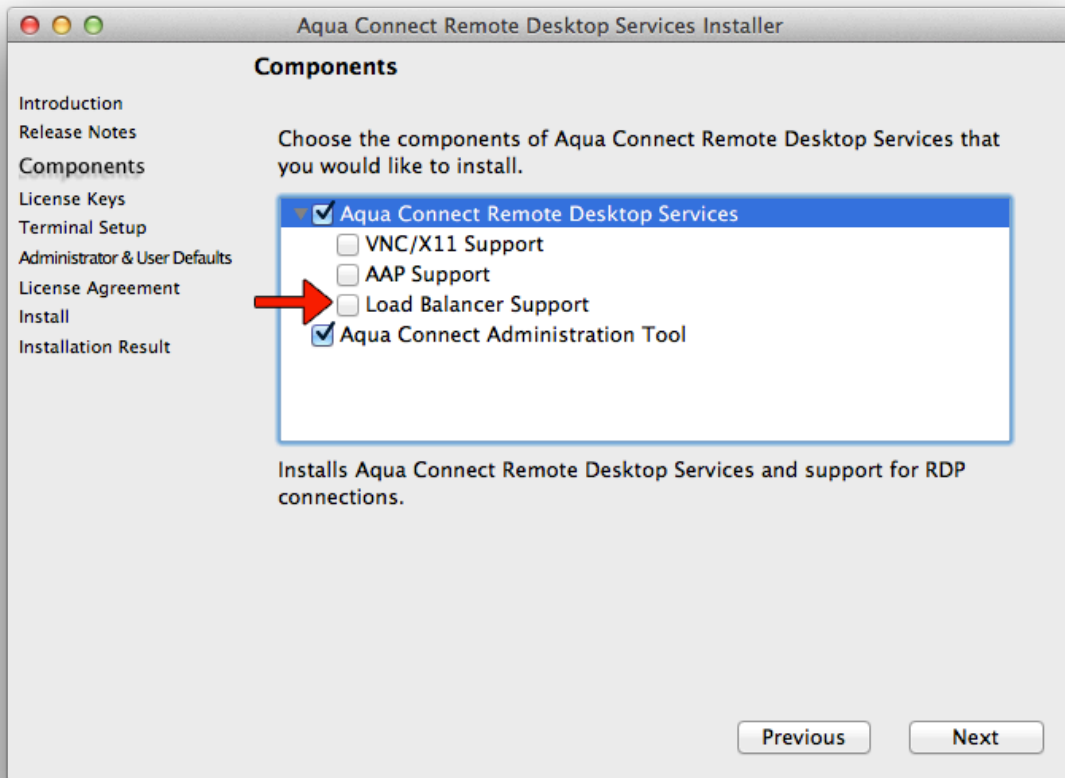
- Apple Mac OS X 10.6, 10.7 or 10.8 software (Client or Server version)
- Aqua Connect Remote Desktop Services 3.5 or higher (on the server side) configured on default protocol ports (RDP 3389, AAP 310)
- Aqua Connect Load Balancer Agent (on the server side- included with recent ACRDS 3.5 and 3.7 installations)

The Aqua Connect Load Balancer can be installed and used on any Mac OS X 10.6, 10.7 or 10.8 machine. It is capable of distributing the client load between 2-50 Aqua Connect Servers (depending on how powerful the machine is). Aqua Connect Load Balancer is a hybrid between a typical TCP/IP load balancer and an intelligent Proxy Server. Due to its hybrid design, the Aqua Connect Load Balancer handles all incoming and outgoing traffic to your ACRDS servers. This design facilitates a secure network infrastructure while maximizing performance. If the Aqua Connect Load Balancer is unavailable, then ACRDS access can be disrupted. In high-availability network infrastructures, multiple Aqua Connect Load Balancers are recommended with a third-party failover mechanism, such as round-robin DNS.

It is highly recommended that the Aqua Connect Load Balancer be installed on a Mac Pro. The Mac Pro typically ships with a dual gigabit Ethernet interface that greatly improves network throughput and performance when properly configured. The Mac Pro's network interface has a co-processor that does much of the TCP, UDP and IP work of the operating system, which also allows for a much higher throughput. While the speed of a core i5 or i7 device would be acceptable, the Mac mini, iMac, etc. have only one Ethernet interface built-in which negates the previously mentioned Mac Pro advantages.

# Installing the Load Balancer

The Aqua Connect Load Balancer can be installed on any Intel Mac machine that is not an ACRDS server. Apple’s Mac OS X Server operating system or application is NOT required but is compatible. During the Aqua Connect Remote Desktop Services installation, be sure to enable the “Load Balancer Support” feature (Aqua Connect Load Balancer Agent). It can be found at the Components screen of the installer (Figure 1). If you have already installed ACRDS without it, you should uninstall and re-install it with the “Load Balancer Support” option enabled.



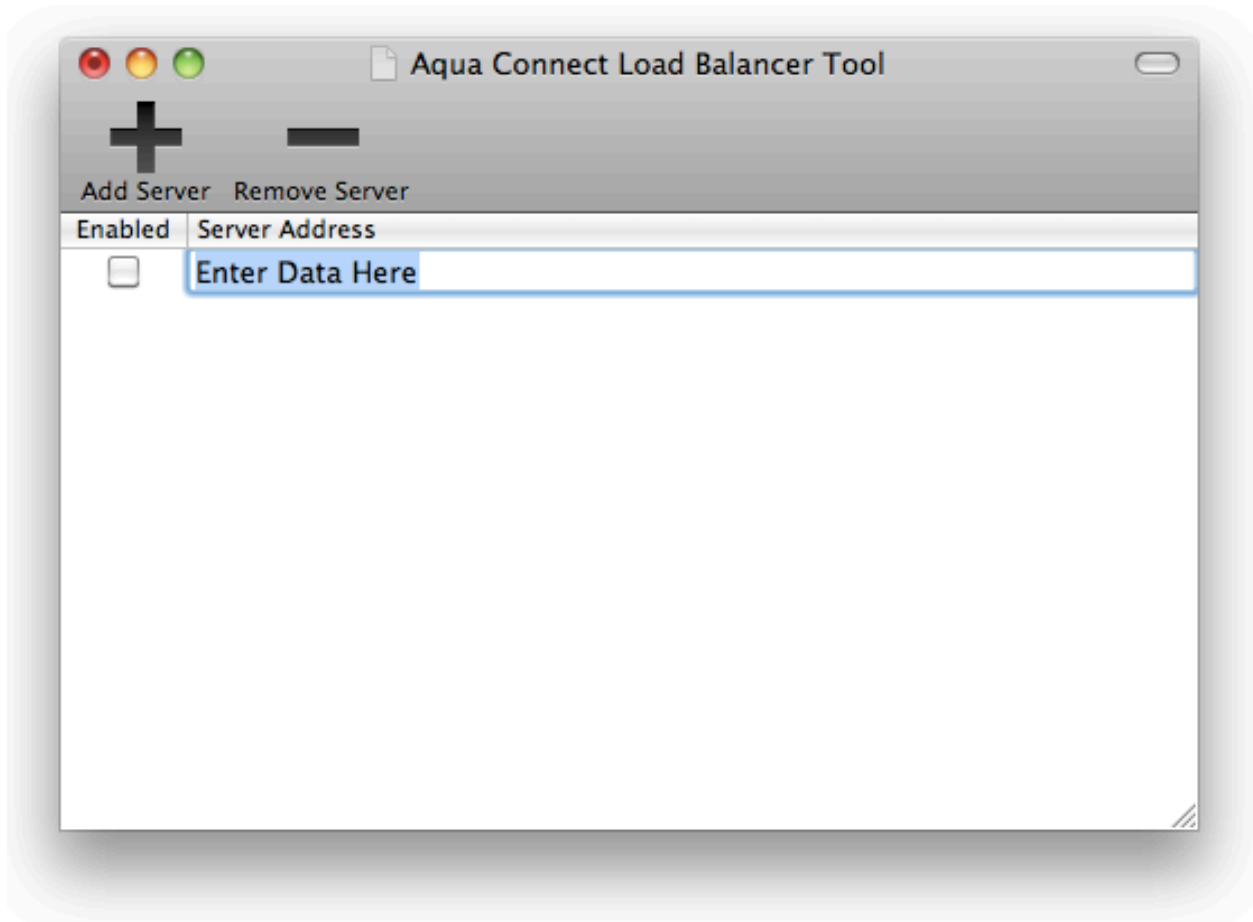
(ACRDS Installation Components Screen - Figure 1)

## Configuration

After installing ACRDS on all of the servers that you wish to load balance, proceed to install the Aqua Connect Load Balancer onto the designated load balancer hardware. During the Aqua Connect Load Balancer installation, the Aqua Connect Load Balancer Tool will be installed into the operating system's Applications folder, typically found just inside the local hard disk ("/Applications").

The Aqua Connect Load Balancer Tool is used to administer the Aqua Connect Load Balancer. The Aqua Connect Load Balancer cannot be directly administered by an administrator and must be administered through the Aqua Connect Load Balancer Tool. The main administrative task of the Aqua Connect Load Balancer Tool is to Add ACRDS servers and Remove ACRDS servers from the Aqua Connect Load Balancer (Figure 2).

All changes to the Aqua Connect Load Balancer by the Aqua Connect Load Balancer Tool will be saved upon exit of the Aqua Connect Load Balancer Tool by selecting "Quit" from the menu bar. Depending on the operating system configuration and the user account used to launch the Aqua Connect Load Balancer Tool, an administrative authentication window may be displayed after a confirmation window is displayed. Upon the Aqua Connect Load Balancer Tool's shutdown, a confirmation window will appear asking you if you wish to save your changes. This is your only opportunity to abort any changes you have made. If an administrative authentication window is shown, a valid operating system administrator account name and password must be entered before proceeding and before the changes take effect.



**(Aqua Connect Load Balancer Tool - Figure 2)**

## Uninstallation

The Aqua Connect Load Balancer can be uninstalled using a separate uninstallation script found on our website. The uninstallation script is designed to run via the operating system's Terminal application (Command Line Interface). Customers who are unfamiliar with the Terminal application are advised to seek Aqua Connect technical support for help during their maintenance contract subscription period. When downloading the uninstallation script, you should place the script in your Downloads folder. Once downloaded, launch the operating system Terminal application as an operating system administrator, typically found in the "Utilities" folder in the "Applications" folder. After the Terminal application has fully launched, enter the following one line command:

```
sudo /bin/bash ~/Downloads/aqua_connect_load_balancer_uninstall.sh
```

An administrator password prompt may be displayed. If it does, supply the currently logged in administrator's password.

## Advanced Technical Specification

The Aqua Connect Load Balancer proxies all of the IP (TCP/UDP) traffic for the AAP and RDP protocols. The Aqua Connect Load Balancer works by determining which compute node (ACRDS instance) is the least busy and routes the connection to that server. Aqua Connect Load Balancer uses a proprietary formula that measures the total number of Cores, Average CPU Clock Speed, Total Memory, Available Memory and Available Licenses.

A score is calculated, updated and assigned periodically to each ACRDS instance. The ACRDS instance with the highest score receives the next connection. The Aqua Connect Load Balancer Agent provides the ACRDS instance score data. The Aqua Connect Load Balancer queries each of the Aqua Connect Load Balancer Agents for this data every 10 minutes. The Aqua Connect Load Balancer updates the score data upon new connections as well as the polling interval.



## Best Practices

- Performance should be measured on each ACRDS instance as well as the Aqua Connect Load Balancer hardware.
- Due to the erratic nature of a clustered load balancing system, configuring ACRDS instances to terminate sessions on disconnect is highly recommended.
- Attempts to reestablish a client to its previous connection is made on a best effort basis but is not guaranteed. It is therefore highly recommended that your deployment be designed with this limitation in mind.
- An optional package (ACTO) can be installed into each ACRDS instance that will allow a system administrator to configure the ACRDS instance to terminate idle or disconnected sessions after a specified period of time such as 30 minutes. It is highly recommended that if you wish to allow reconnections or wish to manage idle connections that this optional package is installed and configured, allowing you to reclaim unused ACRDS licenses.