

## Burstware

Burstware allows clustering of and load balancing on a group of multimedia servers. A Burstware system consists of 3 groups: the servers, the conductors, and the Burstware enabled media player.

### The Burstware Conductor

It receives requests for service from clients; monitors the availability and load of Burstware Servers; provides a list of available Burstware Servers to a requesting client.

### Burstware Servers

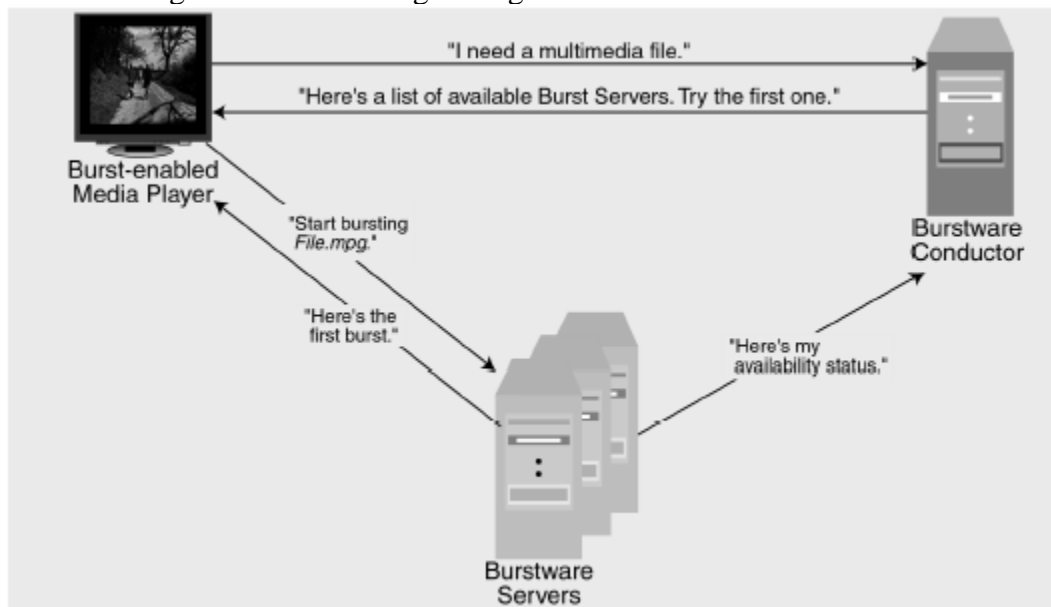
The servers send requested media to clients; monitors their clients' local Burstware caches to determine when, and how much data to deliver to each client.

### Burstware Clients

The clients notify Burstware Conductor when a user requests a multimedia file; connect to the Burstware Server(s) recommended by the conductor to get the file. Existing media player such as Microsoft Windows Media and Apple Quick can be made burst-enable through the use of a burst bridge.

## Operation

The client, the Burstware enabled media player initiates a session by sending a request to the conductor for a particular multimedia file. The conductor replies to the player with a list of available servers from which the file can be directly fetched. The list sent to the client is ordered according server bandwidth availability. The player is expected to get the file from the server with most bandwidth available. If for any reason the file cannot be obtained from that server, the next server in the ordered list is chosen by the client. The servers periodically send to the conductor their available bandwidth. The conductor uses the reports from the server to build the list. The proper construction and use of the list lead to a good load balancing among the servers.



### **Failover Strategy**

This strategy allows a burst enabled environment not to be vulnerable to the failure of a single element in the system. The failover strategy applies at both the conductor and server level.

A typical Burstware system includes a primary conductor and a standby conductor. In the case of the failure of the primary conductor, the standby conductor takes over to service the clients.

As mentioned in the operation section a list including a number of servers is normally provided to the client when it makes a request for multimedia contents. If a solicited server is unavailable, the client can fall back on the next one in the list.

### **Enhanced User Experience**

A burst enabler player is required to have a buffer to initially store a certain amount data it receives from the server before it start playing. While the player is consuming the the content in the buffer the server monitor the buffers of the client it is currently servicing to maintain them at certain level. In the case of momentary interruption of connection the user can continue its viewing experience because what is being played comes from the buffer. If the average buffer level is properly calculated and maintained, most of the time the connection will be re-established before the client buffer runs out. Connection bandwidth along with statistical value such as loss probability, delay, and jitter can be use to determine the average level for the client buffer.

### **Conclusion**

A Burstware user can play most of the common and standard content formats such as ASF, AVI, MPEG1, MPEG2, MP3, WMA, and QuickTime. The user can additionally benefit of the enhanced experience and the reliability provided by burstware. However, I think Burstware lacks some flexibility because it requires that the player be configured in advance by administrator with the primary and standby conductor. That may not be feasible in an Internet environment where there is no central administrative authority.

### **Sources**

Burstware.com

Burstware User Guide