

Job Reservations

Qube!'s reservation system is important for correct management of host resources. This is accomplished with the relationship between reservations and resources.

Each host has a list of resources including system resources such as memory and number of processors. Resources are integer based (meaning '1' and '99' are valid resource counts; 'a' and '4.5' are not) and automatically decrement/increment upon acceptance of a job. A resource can be "discovered" by the system (eg, number of cores) or defined by admins (eg, number of licenses).

The user must know whether the resource is global or host-based (see [System-Wide Resource Tracking](#)). Global resources are tracked through the entire system, for example, license tracking. A host resource is local and specific to each host, for example the number of cores.

Resources are defined and reserved through this syntax:

```
type.name=quantity[ ,type.name=quantity...]
```

This is set on the Supervisor (for global resources, see [supervisor_global_resources](#)), on the host (for host-based resources, see [worker_resources](#)) and/or in the job submission UI in the reservations field.

Specifying Quantity

Syntax	Meaning
<code>host.processors=1+</code>	Dispatch to a worker with at least 1 open slot, then occupy all currently open slots. The general form is <code>host.processors=N+</code> , where <i>N</i> is a positive integer.
<code>host.processors=1*</code>	Dispatch to a worker with at least 1 open slot <i>and</i> no used slots (i.e. <i>worker must be idle!</i>), then occupy all currently open slots. The general form is <code>host.processors=N*</code> , where <i>N</i> is a positive integer
<code>host.processors=all</code>	Equivalent to <code>host.processors=1*</code>
<code>host.processors=N-M</code>	Dispatch to a worker with at least N to M open slots. Upon being dispatched to a worker, it occupies as many slots as it can, up to M, as slots become available.

Dynamic Thread Assignment

When a 1+ or similar job picks up on a Worker, we don't know how many slots were available or assigned to that instance. That number is made available dynamically in the running job's environment as an environment variable, `QB_JOBSLOTS=6`, (or whatever the value) and stored in the Qube! database in the job's subjob table as "allocations". One use of this could be that the job references `$QB_JOBSLOTS` on the command line to specify the number of threads a renderer should use.

Examples

Reservation	Explanation
<code>"host.memory=200"</code>	Reserve 200MB of memory on the host
<code>"host.processors=1+"</code>	Reserve all processors on a host, but at least 1 must be available in order to start
<code>"host.processors=1-20"</code>	Reserve 20 processors on a single host, but at least 1 must be available in order to start
<code>"global.maya=1"</code>	Reserve a global resource called maya

See Also

[supervisor_global_resources](#)
[worker_resources](#)
[System-Wide Resource Tracking](#)