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ARC BROKER

Paper Subtitle

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Contents

1 Introduction

This document contains a description of the broker used in the Advanced Resource Connector (ARC) middleware as of version 1.0. In section 2 a description of how target attributes are matched and compared to attributes specified in the job description.

2 Attribute matching

In the broker attributes published by the candidate target need to be matched and compared to attributes specified in the job description to be able to select targets which are suitable for accepting the job description. Targets which do not pass a certain comparison will be not be a candidate target for submission. Detailed information about the attributes described below can be found in the ARC job description document. First the broker will check some basics for the target being processed. First, if the job description specifies submission to specific targets and/or queues, the target will be checked and if it is not among these targets and/or queues, it will be dropped. Next the number of free slots on the target will be checked, and if no free slots exist, then it will be dropped. After this, the health state of the target is checked, and if any other value than "ok" is published then it is dropped. Last, if middleware specific submission is specified in the job description, the middleware type of the target is checked, and if it does not satisfy the middleware requirements then it is dropped. After these basic checks, certain attributes specified in the job description are compared to the attributes published by the target being processed. If the target does not publish a attribute which is specified in the job description the target will dropped, with some exceptions.

References

[1] NorduGrid middleware, the Advanced Resource Connector. `http://www.nordugrid.org/middleware/`

[2] The Globus Alliance. `http://www.globus.org`

Job description attributes	Comparator	Target attribute	
Resources.CandidateTarget[i].EndPointURL	==	url	
Resources.CandidateTarget[i].QueueName	==	MappingQueue	
Application.ProcessingStartTime	<	DowntimeStarts	AND
Application.ProcessingStartTime	>	DowntimeEnds	
Resources.CEType	isSatisfied(	Implementation	)
Resources.TotalWallTime.range.max	<	MaxWallTime	
Resources.TotalWallTime.range.min	>	MinWallTime	
Resources.TotalCPUTime.range.max	<	MaxCPUTime	
Resources.TotalCPUTime.range.min	>	MinCPUTime	
Resources.IndividualPhysicalMemory	≤	MainMemory	OR
Resources.IndividualPhysicalMemory	≤	MaxMemory	
Resources.IndividualVirtualMemory	≤	MaxVirtualMemory	
Resources.Platform	!=	Platform	
Resources.OperatingSystem	isSatisfied(	OperatingSystem	)
Resources.RunTimeEnvironment	isSatisfied(	ApplicationEnvironments	)
Resources.NetworkInfo	in	NetworkInfo	
Resources.DiskSpaceRequirement.SessionDiskSpace	≤	MaxDiskSpace	OR
Resources.DiskSpaceRequirement.SessionDiskSpace	≤	WorkingAreaTotal	
Resources.DiskSpaceRequirement.DiskSpace − Resources.DiskSpaceRequirement.CacheDiskSpace	≤	MaxDiskSpace	OR
Resources.DiskSpaceRequirement.DiskSpace − Resources.DiskSpaceRequirement.CacheDiskSpace	≤	WorkingAreaTotal	
Resources.DiskSpaceRequirement.DiskSpace	≤	MaxDiskSpace	OR
Resources.DiskSpaceRequirement.DiskSpace	≤	WorkingAreaTotal	
Resources.DiskSpaceRequirement.CacheDiskSpace	≤	CacheTotal	
Resources.SlotRequirement.NumberOfSlots	≤	TotalSlots	
Resources.SlotRequirement.NumberOfSlots	≤	MaxSlotsPerJob	
Resources.SessionLifeTime	≤	WorkingAreaLifeTime	
Resources.NodeAccess is NAT_INBOUND OR NAT_INOUTBOUND	AND	ConnectivityIn	
Resources.NodeAccess is NAT_OUTBOUND OR NAT_INOUTBOUND	AND	ConnectivityOut	

Table 1: