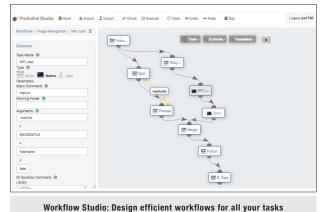# ProActive Workflows & Scheduling

Highlights

- Workflows ease task parallelization, running them on resources matching your constraints

- Intuitive web interfaces are provided to design and execute your job workflows, and manage your resources. Powerful APIs allows easy integration within your solution

- Federate your existing resources, add extra resources from clouds. Reduce costs with energy saving strategies and elasticity

Learn More

Download   **Try Online**   **Get Demo**

Register and get free support during a 10 days period

activeeon.com/workflows-scheduling

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Overview

ProActive Workflows & Scheduling allows you to **easily execute all your company jobs** and business application, monitor activity and quickly access job results. Allowing your IT to **scale up and down according to your actual workload**, it will ensure the optimal match between disponibility and cost. It ensures more work done with fewer resources, managing heterogeneous platforms and multiple sites with advanced usage policies. Thanks to its flexibility, *ProActive Workflows & Scheduling* will help you for any expansion, federation and integration project.
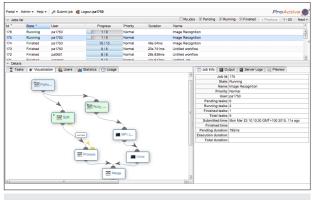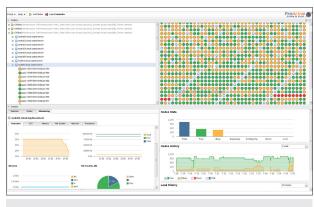

Workflow Studio: Design efficient workflows for all your tasks

Scheduler Portal: Run, monitor and manage workflows execution

Resource Manager Portal: Unify and manage all your resources

ProActive
Workflows & Scheduling

Main Features

User interfaces	A web portal with three dedicated interfaces allows workflows creation, job management and resource management. Web interfaces simplify deployment and updates to clients as only a web browser is required. Command line interface allows console usage and script integration.
Workflows	Workflows helps for comprehension and maintainability of jobs. They can be created with our graphical web editor or in xml format. It supports complex structures with conditional statements, loops and replication. Data movements can be specified as well.
Tasks	Various kind of tasks are supported: scripts (javascript, groovy, bash, …), Java classes and system executables. A single task can also be executed on multiple nodes at the same time, as for MPI and OpenMP.
Resource selection	Selection scripts make resource selection really flexible. Specify any kind of resource constraint for you task, like a number of cores, the local presence of a particular dataset or the currently available network bandwidth.
Scheduling	Prioritization, planification and recurrence are available for the user's jobs. Default scheduling policy is FIFO but for specific needs, custom policies can be added as extensions.
Placement rules	Placement of the task to execute can relies on a combination of multiple factors, including constraints attached to a task (like OS version), proximity or exclusion rules.
Resources management	Resource provisioning is handled by a various set of extensible policies to offer the highest rate of flexibility. For each resource (or set of them) you can apply static policies, as well as capacity planning, auto-scaling or on-demand policies.
Monitoring	Monitoring helps you troubleshooting any issue you may experience during execution or development of your job workflows. It is also useful to keep an eye on the status of the whole ProActive platform.
Integration and API	A RESTful API is available for users and administrators. Web portals are built on top of it, ensuring that all functionalities are accessible through this API. There is also a Java SDK with advanced functionalities such as events and disconnected mode.

Robustness

Scalability	Scalability of the system has been validated up to a 7,000 cores infrastructure, with dozens of users and millions of submitted jobs.
Speed	Typical jobs are usually started less than 2 seconds after their submission. A large job which requires hundreds of nodes, allocation and execution takes less than a few dozens of seconds.
Fault Tolerance	Fault-tolerance for the computations are handled natively by the system which can deal with node and task failures to get things done. Also, server state is fully backed on a database, to ensure clean resume of computations in case of crash (Disaster Recovery).
Security	User authentication can rely on your existing directory service. Different roles can be defined to allow a precise set of actions. All communications between system components can be encrypted (web portals, server, nodes and tasks).

Infrastructures

Public Clouds	Increase your workload capacity with public Clouds seamless integration. Costs can be optimized using on-demand resource acquisition and cloud provider pricing model. ProActive is able to acquire resources on cloud public (EC2, Microsoft Azure) or private (Openstack, Open Nebula) and can directly managed virtual machines (Vmware, KVM, Microsoft Hyper-V, VirtualBox).
Private Infrastructures	Aggregate all your resources with our set of infrastructure connectors. Both, physical and virtual infrastructures are availables and specific resource usage policy can be defined for each.
Storage	POSIX file systems (local, NFS, Lustre, …) Remote access: FTP, SSH Dataspace virtual file system
Third-party services	It is possible to interface with third-party services, like native schedulers, for service composition and exploitation of extra resource platforms. Those services are extensible with plugins.
Energy saving	According to the resource management policy, machines can be started or stopped automatically to satisfy your energy saving guidelines.

Requirements

Server side	Minimum: 2 cores, 2GB RAM, 20GB Storage OS: Linux (any distribution), Windows (Seven, Server 2003), Mac OS X Physical or virtual machines
Node side	Minimum: 1 core, 512MB RAM, 1GB Storage OS: Linux (any distribution), Windows (Seven, Server 2003), Mac OS X Physical or virtual machines
Client side	Modern web browser: Chrome, Firefox, IE10+, Safari