WORKLOAD CONSOLIDATION

FREQUENTLY ASKED QUESTIONS

Frequently Asked Questions

HOW DO I INSTALL WORKLOAD CONSOLIDATION?

You can request a trial to Eco4Cloud here. You will receive Eco4Cloud virtual machine along with a trial license code. You can deploy and set Workload Consolidation up and running in 5 minutes.

HOW DO I UPDATE WORKLOAD CONSOLIDATION?

Eco4Cloud provides several ways to update its software. You can either enable automatic update, or update it manually. Furthermore, you can use Eco4Cloud updates server, replicate a copy of the update server in your private network for compliance to security policies, or even receive the updates offline.

HOW DOES WORKLOAD CONSOLIDATION INTEGRATE WITH THE SERVER VIRTUALIZATION PLATFORM?

Workload Consolidation relies on the APIs offered by each virtualization platform to retrieve the information needed, e.g. performance metrics on hosts and VMs. All Workload Consolidation operations (i.e. virtual machines migrations, hosts switch-on/off, etc.) are passed to and checked by the virtualization platform before their execution. Therefore, Workload Consolidation operations do not conflict in any possible way with the normal operation of the underlying virtualization platform but rather optimizes it.

HOW LONG WILL IT TAKE TO DEPLOY WORKLOAD CONSOLIDATION?

Workload Consolidation can be set-up and running in 10 minutes.

After setting it up, a typical Workload Consolidation deployment articulates in the following stages:

- **Analysis** – Workload Consolidation uses a monitoring tool to analyze the data center (1 week);
- **Report** – Eco4Cloud estimates the impact of Workload Consolidation in terms of energy savings and QoS improvement (1 day);
- **Remote Monitoring** – VM consolidation starts. The data center is constantly monitored and product upgrades are provided.

WHAT IS THE NECESSARY INFORMATION WORKLOAD CONSOLIDATION NEEDS TO CONDUCT ANALYSIS?

Workload Consolidation collects detailed data about virtual resources inventory and performance metrics for datacenters, clusters, storage units, physical hosts and virtual machines.

WHAT ARE THE NECESSARY ADMINISTRATIVE RIGHTS?

Workload Consolidation needs only read-only privilege on the virtualization platform, during the analysis phase. In the remote monitoring phase, Workload Consolidation must be able to migrate VMs, switch-on/off hosts, issue tasks and alarms. Operations and privileges are fully documented in the User Manual.

WHAT PORTS NEED TO BE OPEN?

Workload Consolidation needs to communicate only with the virtualization manager. For example, in a VMware environment the only port that must be accessible is the TCP 443 of the vCenter. Workload Consolidation is available as web application on the Eco4Cloud virtual machine, so TCP ports 80 and 9800 must be opened at Eco4Cloud virtual machine.

DO I NEED TO INSTALL AGENTS?

With Eco4Cloud products, you never need to install any agents on the target hosts or virtual machines. Workload Consolidation is an agent-less software that consolidates virtual machines on the fewest possible hosts, leveraging existing virtualization platform managers already on the systems.

DO I NEED TO PURCHASE OTHER SOFTWARE OR HARDWARE TO RUN WORKLOAD CONSOLIDATION?

Workload Consolidation is a software that operates on top of most popular Virtualization infrastructures, e.g. VMware vSphere or Microsoft Hyper-V. Therefore, Workload Consolidation does not require anything other than the virtualization software a data center is already running and actually integrates and interacts with it.

Workload Consolidation gives the best results when combined with other Eco4Cloud products.

WHAT HARDWARE VENDORS AND OPERATING SYSTEMS DOES IT WORK WITH?

Again, Workload Consolidation is a software that operates on top of most popular Virtualization infrastructures, e.g. VMware vSphere or Microsoft Hyper-V. Therefore, Workload Consolidation works regardless of the hardware vendors of the physical hosts and of the guest OS installed in the virtual machines, even if it is aware of them.

IS THIS LIKE LOAD BALANCING?

No.
Load balancing algorithms tend to spread the workload across a number of hosts, and prevent situations in which some hosts are underutilized and others overloaded. Load balancing does not aim to unload and switch off hosts, in fact energy saving is not the purpose of such solutions.

Workload Consolidation consolidates the virtual machines onto as few hosts as possible, to reduce costs and energy consumption, and increase utilization. Since Workload Consolidation can switch-off hosts that are not required to meet the services demand, this translates into a reduction of the electrical energy consumption. Therefore, while load balancing distributes the load over all the available hosts, which may lead (and generally leads) to underutilization of all hosts, consolidation clusters the load on as few hosts as possible. As a result, with VM consolidation (which Eco4Cloud features) physical hosts are either switched-off or used efficiently, with resources (e.g. CPU, RAM) operating within a predetermined range of utilization, e.g. between 50% and 85%.

In addition to cost reduction and energy savings, Workload Consolidation brings other important advantages, such as:

- carbon emissions are significantly reduced, which can help companies qualify for “green certifications”;
- powered-off hosts can be used to accommodate additional workloads, hence deferring the purchase and related CapEx of additional equipment/capacity;
- given a certain workload, fewer hosts will need to be managed/maintained/cooled;
- real estate (i.e. data center square footage) requirements also get reduced as fewer physical hosts are in operation.

HOW MUCH WILL WORKLOAD CONSOLIDATION IMPACT OPERATIONS?

It will not, at all.

Workload Consolidation is aware of load balancing and availability rules defined in the virtualization platform (e.g. affinity/anti-affinity rules), as well as misconfigurations preventing VM migrations or host switch-on/off operations (e.g. VLAN isolation, or BMC not configured), availability of resources (e.g. CPU, RAM, virtual switches).

Workload Consolidation is also aware of hosts put in maintenance mode, keeping them out of the consolidation process.

HOW MUCH WILL WORKLOAD CONSOLIDATION AFFECT QUALITY OF SERVICE?

Not at all. Actually, Workload Consolidation enforces Quality of Service, because it identifies overloaded sectors of the data center and balances the load. The consolidation process constantly checks performance metrics such as CPU ready time and ballooned memory, in order to detect a QoS decrease on hosts and VMs and balance the load immediately.

WHAT OTHER TOOLS CAN I REPLACE IF I DEPLOY WORKLOAD CONSOLIDATION (SPECIFY BRANDS)?

None.

By default, virtualization software does not perform optimized consolidation of VMs and therefore you do not need to replace anything. Workload Consolidation is in fact an add-on element that makes your data center more efficient and your physical hosts utilized to their full capacity. Among commercially available server virtualization platforms, VMWare offers a module that partially addresses VM consolidation, i.e. the Distributed Power Management (DPM) tool. However, the algorithm used by DPM is not scalable and does not allow the user to control and monitor the distribution of the workload, which instead Workload Consolidation features. It is our evidence that VMware users generally prefer not to activate DPM at all because its behavior is not clear and it is not controllable/configurable.

WHAT OTHER COMMERCIAL PRODUCTS PROVIDE "VM CONSOLIDATION"?

There are a few products on the market which address this space, however due to their traditional approach the savings they are able to achieve are only a fraction of what can be achieved by Workload Consolidation; furthermore, administration is much heavier and complicated, and scalability is not guaranteed (i.e., they are efficient only in small data centers deployments).