Versatile tool collection for license usage analysis and management, and IT maintenance in core facilities.

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Abstract

1) License usage tracking

Core facilities often face various user demands for software packages and licenses. To not over-buy or under-provide, core facilities require tools to analyze the actual usage of software packages. Software vendors use different license server software and do not provide tools to get detailed license usage breakdowns. For example, Imaris (Bitplane) and Vision4D (Arivis) are two of the most commonly used software packages in the Life Imaging Center (LIC). Both come with their own license server hosted on-site by the LIC. We wrote a tool to analyze the license usage, break down the usage to individual modules, users and hosts, and compare the total license usage at any given time to the maximum number of licenses available to detect potential bottlenecks. These data also help to tailor the number of licenses to the actual need of the facility and potentially reduce licensing costs. It can also be used to discuss work group contributions to license payments in an indirect usage-dependent pricing scheme.

2) License management

To integrate hardware license dongles, the LIC deployed a dongle-server infrastructure that allows for dynamic mapping of dongles to workstations and virtual machines on demand in various modalities, effectively turning license dongles into floating licenses (if not node-locked by other means). License dongles can be directly assigned to fixed systems (like microscope systems or servers) or build up "floating" pools (like image analysis workstations) automatically assigned on demand. We built an integration of the core facility's booking system (EZBooking, Artologik) to make the booking of software licenses mandatory for any user. With this system, license dongles get dynamically assigned only to users with a valid booking when they log in on an image analysis workstation for the duration of their booking. The system keeps track of changes to the booking and, if available, allows for booking extensions during an active session. The number of license dongles could be reduced by simultaneously increasing availability and flexibility for the user. With the integration of the booking system, we could guarantee the availability of a specific license dongle for the booked period to the user. This system will also be extended to cover integration for floating licenses of dedicated license servers. With the booking system as the central authority of license distribution, it can be used to track license usage to bill users according to their actual license usage.

3) IT maintenance

Besides the approx. 20 microscope setups, the Life Imaging Center hosts 13 image analysis workstations with various hardware specifications and storage capabilities. To provide an extensive up to date portfolio of software packages we optimized our software distribution and maintenance workflow. Standard OS and office applications are maintained by central IT via the domain infrastructure. Specialized software packages like image analysis software are maintained by the core facility. Therefore, we wrote tools to deploy and maintain specific software packages remotely and silently. The tools are tailored specifically to individual software packages and include licensing, installation of dependencies, and wrappers to enable complete silent remote maintenance.

We further deployed tools to keep track of all hardware specs, software installations, and the storage situation on all our computers. With approx. 250 active users, older systems were quickly flooded with old user account data, which led to system drive clogging and a considerable increase in backup storage requirements. For this reason, the LIC deployed tools that allow for easy maintenance of user accounts and user data on the clients. If specific criteria are met (like inactivity or expiration), user accounts are fully removed on the clients, and any remaining user data is transferred to a separate location. A report including all actions is generated with the possibility of excluding accounts as special cases.

All tools are available on request and can be modified to tailor them to your facility's needs.