openlab expands its teaching activity for CERN programmers

With the LHC nearing start-up, the pressure on HEP software developers is without doubt greater than ever before. Unfortunately, changes in the hardware acquired by the CERN Computing Centre and elsewhere force us to bid farewell to the recent golden age of nearly unlimited resource availability. Frequency scaling has ended and multicore systems have instead become prevalent, but the required memory has become costly in terms of money and power consumed. Such changes prompt programmers to take a close look at parallel programming models and at other ways to optimize their code. To facilitate the transition to more challenging hardware environments, openlab is expanding its training offer.

openlab was actively involved in software training in 2007 and this year will see an expanded portfolio of workshops. The tried-and-tested formula of a multithreading workshop cycle every half year is also being applied in 2008, with one workshop in May and another later this year. Experienced instructors from Intel have provided helpful advice and will continue to aid in this effort. In the second half of 2008 a new type of workshop, related to performance tuning and hardware architecture, will be offered to CERN programmers. The formula has already been tested on a select group of software developers and has even been included in this year's CERN School of Computing. As with the multithreading workshop, the class is being planned as a half-year cycle.

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For more information about openlab, visit the webpages at http://cern.ch/openlab.

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PC application maintenance follows a lifecycle

Each computer application that is deployed by the IT-IS group needs to be maintained throughout its lifecycle. This maintenance includes following up new versions released by vendors as well as monitoring all security vulnerabilities discovered in an application. Appropriate actions are taken depending on the severity of the issue. These activities have become more demanding over time, so a range of tools is used at CERN that allows us to deploy Windows applications in an easy, flexible and fast way. These tools also mean that we can constantly monitor the CERN Windows environment in order to know which applications are installed on computers managed by the NICE team.

This article describes the processes involved in the management of an application throughout its lifetime at CERN, followed by three case-studies.

The NICE environment

Managing and supporting applications at CERN is a daily challenge. Currently we have around 6000 Windows-based computers divided into 40 sets. Each set defines its own group of applications with the relevant deployment configuration. Standard computers normally have access to 20 core applications (including big applications like Microsoft Office and Adobe Acrobat Reader, but also small ones such as the CERN Phonebook and 7-zip). In addition to these there are about 100 other applications available for installation on demand. Each one has a support level defined. Given that the application set is large, the variety of support levels is also very large. The support level for any application can be composed of a few elements.

- **Installation** – IT/IS (or another group) prepares the installation package, which is then available via the Computer Management Framework (CMF). As soon as an application appears in the add/remove packages list in CMF, any problem with its installation on a standard NICE computer can be reported to the Helpdesk.
- **Usage** – IT-IS (or another group) provides help for the application. To check whether you can get such help through the Helpdesk, see whether the application provides an e-mail address in the "Contact" column on the CMF add/remove packages page.
- **Forced updates** – IT-IS (or another group) follows up all published application vulnerabilities and, as soon as it is considered critical, the update correcting the problem is deployed on all centrally managed NICE computers. Depending on the severity of the issue, we try to bundle such updates together with monthly Windows security updates.
- **Optional updates** – IT-IS (or another group) follows up published application vulnerabilities and prepares all of the necessary update packages in CMF. Updates are then available through the CMF add/remove packages page and can be freely installed.
- **E-mail notifications** – IT-IS follows up all