LHC@Home and CernVM

A new approach to porting large-scale applications to BOINC
一种将大型应用程序移植到 BOINC 的新方式

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Large Hadron Collider at CERN

The beginning 开始

The challenge 挑战

- Why don't you run real LHC physics on BOINC?
- 为什么不在 BOINC 上运行真正的 LHC（大型强子对撞机）物理计算？

The challenge 挑战

- Allow "any" PC to run a full LHC physics application.
- 任何计算机都能运行 LHC（大型强子对撞机）的应用程序

- Make those PCs look like a "standard" CERN Data Center.
- 这些计算机看起来就像一个标准的 CERN（欧洲核子物理研究中心）数据中心

We did it! 我们做到了！

Technical challenges 技术难关

Challenge: Porting source code

挑战：移植源代码

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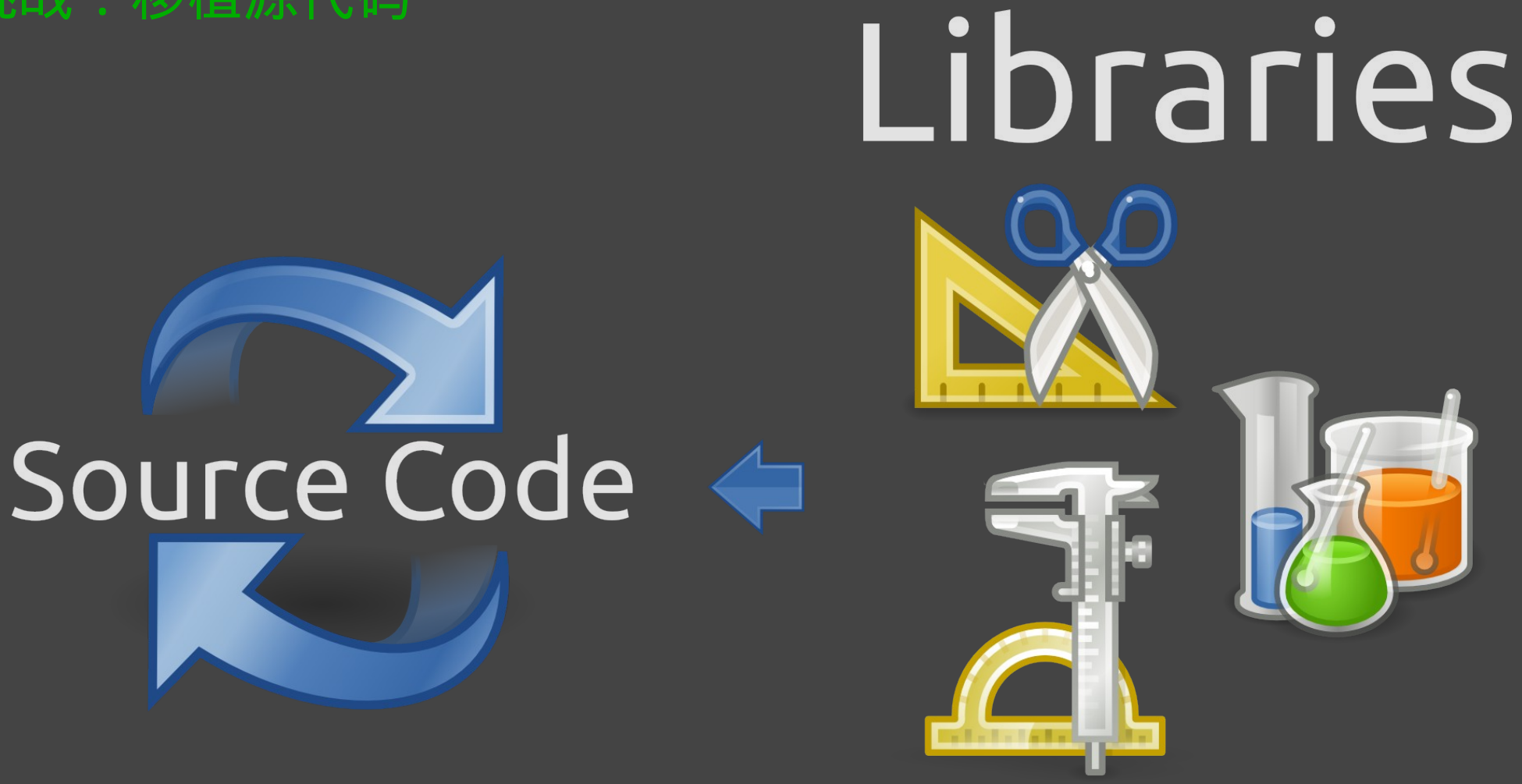


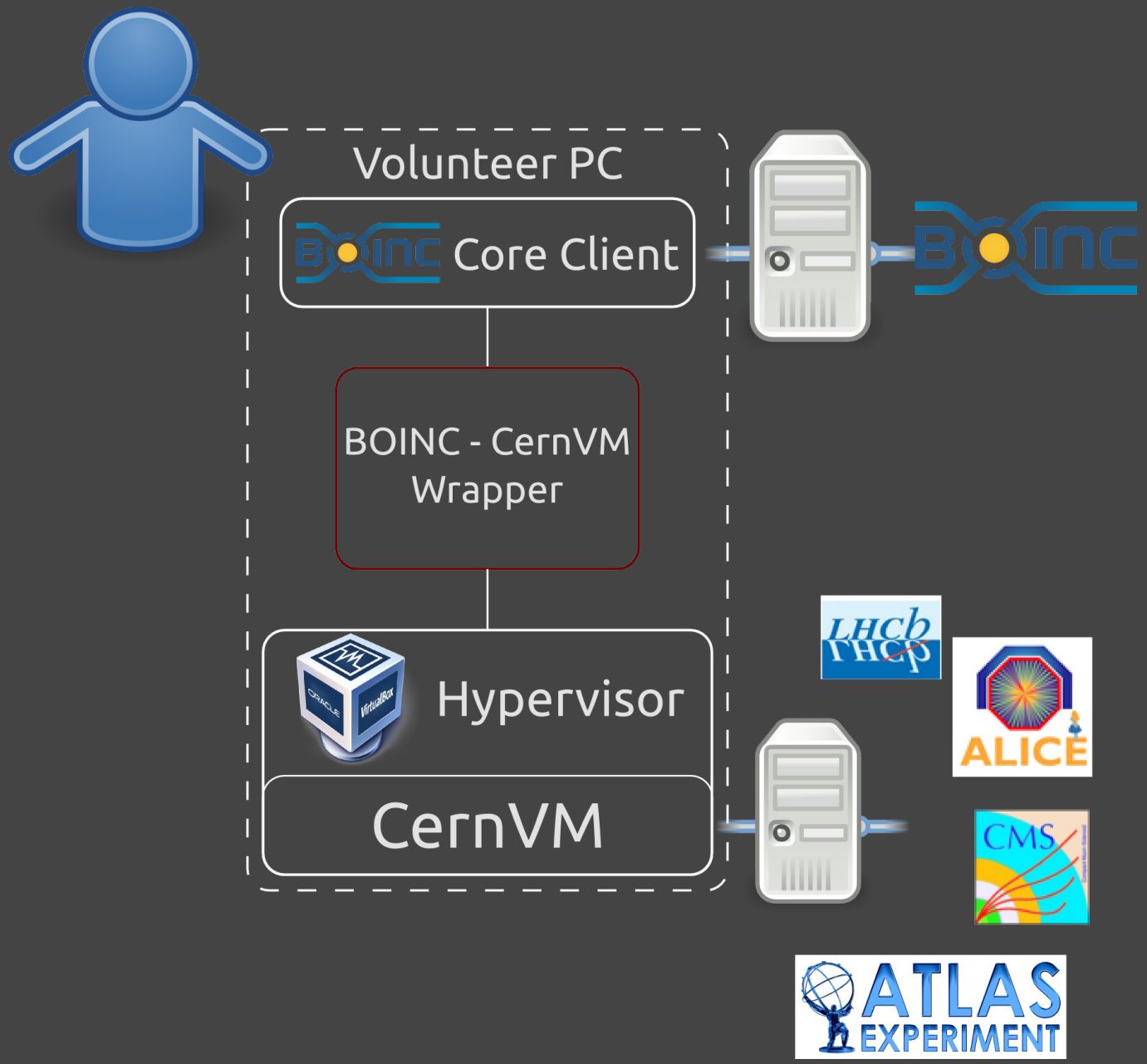
Solution: Virtualization + BOINC
解决方案：虚拟化 + BOINC

CernVM

- CernVM is a Virtual Software Appliance for the participants of CERN LHC experiments.
- CernVM 是专门为 LHC 试验的参与者定制的虚拟化程序。

- Virtualization and CernVM solve the technical challenges.
- 虚拟化的概念和 CernVM 技术解决了上述的技术难关。

BOINC + CernVM infrastructure
BOINC + CernVM 架构

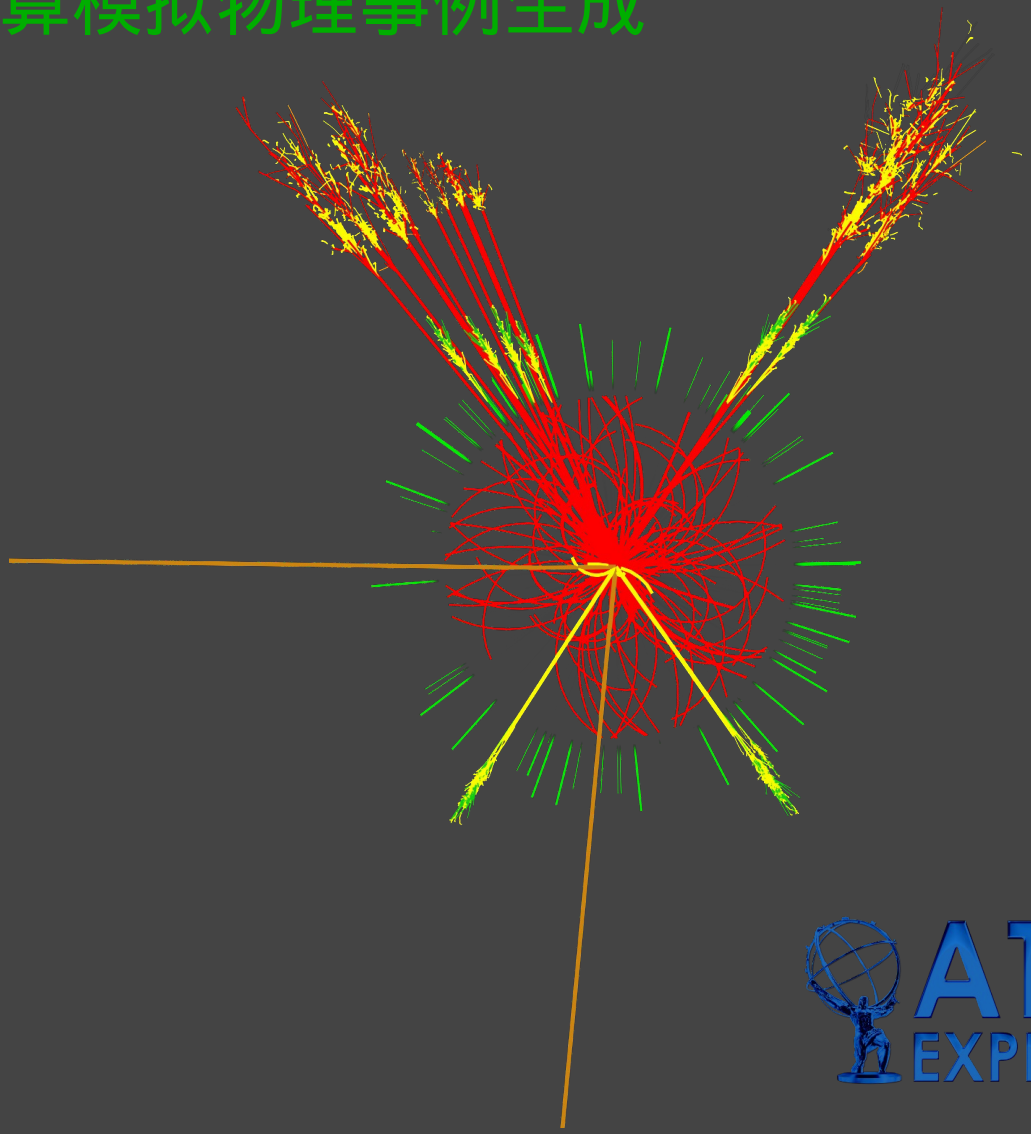


Test4Theory, a real project

在理论物理上的测试，一个真实的项目

Monte Carlo events generation

蒙特卡罗计算模拟物理事例生成



ATLAS EXPERIMENT

Alpha testing

Active forums 活跃的论坛

- More than 500 posts in the forum so far.
- 论坛发帖数超过 500 条

- Very active volunteers, reporting all the problems they find.
- 志愿者非常活跃，报告他们发现的所有问题

Numbers 一些统计

- Up to now 25000 jobs have been successfully executed.
- 完成的作业数目超过 25000 个
- 6250 millions of events have been simulated.
- 模拟了 62 亿个物理事例
- There are on average 20 on-line users at any time.
- 平均在线用户（志愿者）大约为 20 个
- We are running 1200-1300 jobs daily.
- 每天完成的作业数目约为 1200 - 1300 个

Conclusions 总结

为 BOINC 建立了一片“志愿云”

We have built a Volunteer Cloud for BOINC!

Questions

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