Monitoring large scale Java/JEE with RHQ

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About me...

Romain PELISSE

- **Middleware Consultant** at Red Hat (2011)
  - Architect Middleware JBoss
  - Red Hat Enterprise Linux Expert
- Committor **PMD** and **XRadar**
- Translation for **HgBook**
- Teacher at
  - Build and OPP @ESME Sudria, Paris
  - Basic programming @Humboldt University, Berlin
  - Introduction to Middleware @ISEP, Paris
- Technical author for GNU/Linux Magazine France
- Clearly, I don’t sleep enough...
What is RHQ?

- **RHQ Project**:
  - formerly known as Hyperic
  - became then Jopr
  - and now RHQ
  - Open Source version of JBoss Operation Network (JON)
- licensed under GPL
- sponsored by Red Hat, but, as all Red Hat project, Open Source:
  - source code, build, releases - all available
  - community driven - mailing list, public tracker, ...
  - subscription for supports and consulting available for JON
RHQ and JBoss ON

- RHQ - an Open Source Project
  - http://rhq-project.org/
  - Current Version 3.0
- JBoss Operations Network
  - Downstream from RHQ
  - JBoss Operation Network
  - Current Version 3.x
What does RHQ do?

- Operations management software for Java/JEE applications
  - Monitoring
  - Provisioning
  - Drift control
- provides in-depth support for Java applications - seldom lacking in other tools.
Why Java/JEE again requires a specific tool?

- JVM are **black box** for the system
- Java Apps are build on top of it, so even more "hidden"
- tools seldom have proper support to monitor discuss with JVM...
- ... while there is a lot of metrics and operations available!
RHQ Overall Architecture
Welcome to RHQ

The RHQ project is an abstraction and plug-in based systems management suite that provides extensible and integrated systems management for multiple products and platforms across a set of core features. The project is designed with layered modules that provide a
RHQ Resource Summary
Key points to remember

▶ Agent do the actual monitoring work
▶ Plugin does the heavy-lifting
▶ RHQ is a framework to help you implements and design monitoring strategy
▶ it’s Open Source!
"Gravy"

Current status

- top of the art infrastructure:
  - Nagios
  - Puppet
  - RPM
- Why would I need RHQ? :-)

RHQ or not RHQ?

- still bring deeper monitoring/capacities for Java App
- added value if many Java/JEE components (AS, Portal, JMS Stack...)

Current status

- all applications are Java based
- infrastructure is a commodity - basic monitoring is enough
- databases are out of scope

RHQ or not RHQ?

- one tool ("...to bind them all")
- leverage Java knowledge
- custom specific alerts or metrics for deployed Java apps
Current status

- *small IT:*
  - 2 Apache
  - 1 JBoss Server running the apps
  - a database

**RHQ or not RHQ?**

- one tool (*"...to bind them all"*)
- leverage java knowledge
- custom specific alerts or metrics for deployed Java apps
How does RHQ scale?

- **stateless** architecture:
  - no session replication needed
  - no need for clustering
- good performances achieved with supported database
  - Postgresql
  - Oracle

What to look for to increase scalability

- tweak down metrics collection interval
- reduce amount of data collected
How do cope with a HUGE number of instances?

- at some point, database will become a bottleneck
- no real cluster, share state in database, and no distributed model
A Strategy to scale to the "infinite" (or at least "a lot")

- monitoring data does **not** need to be centralized
- configuration and templating (alerts, metrics) needs to be the same everywhere
- run several RHQ setup, not sharing database but with configuration synchronized!
We need you!

- synchronization features from RHQ incomplete
- server side Java API lacking the proper methods to do it
- somewhat complex coding challenge to implement
Any Questions?
Annexes

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