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Enabling Grids for E-sciencE

Quattor in Amazon Cloud
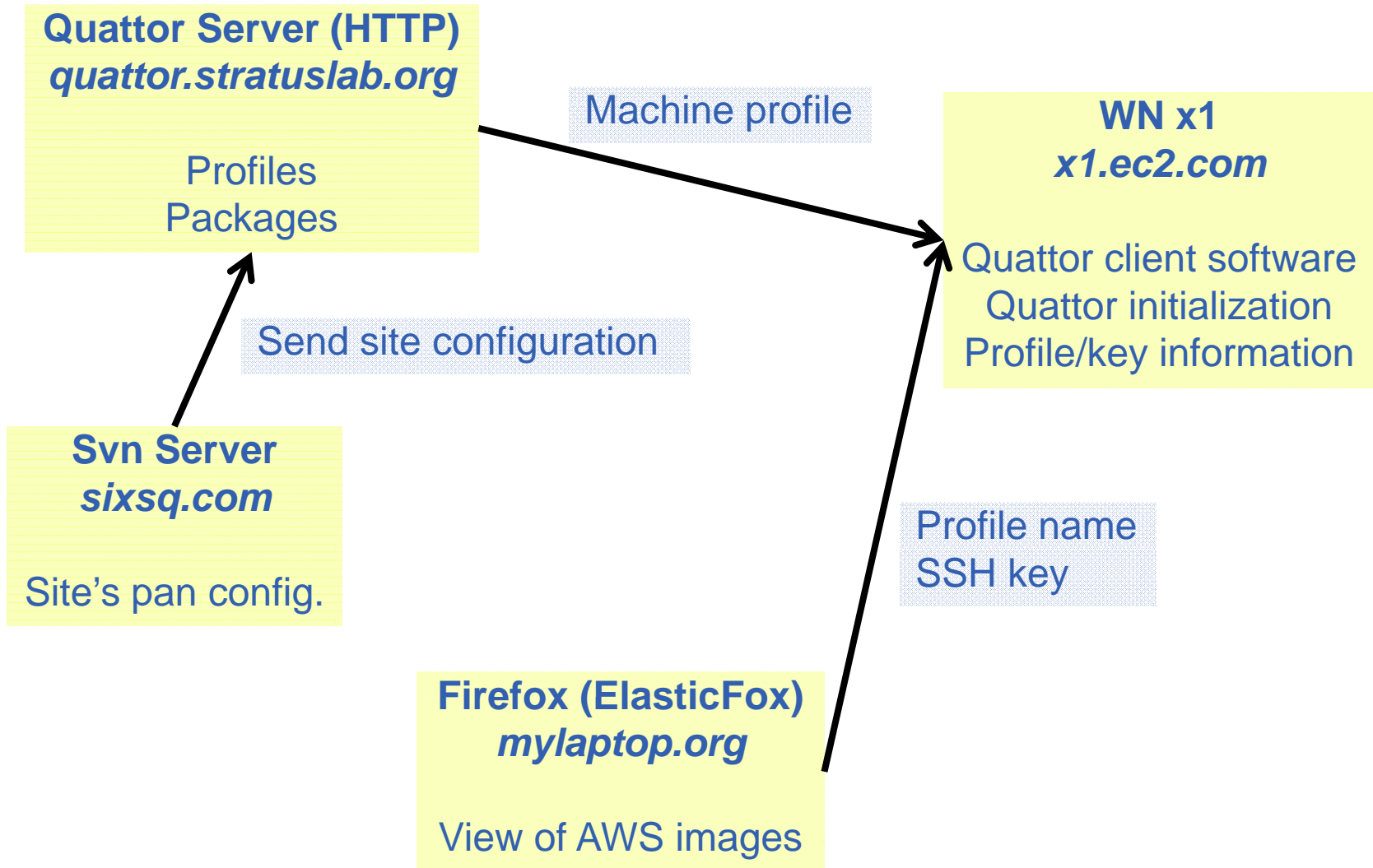
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Quattor Workshop (London)
11-13 March 2009

- **Amazon Web Services (AWS)**
  - Summary of AWS services
  - Differences with standard virtual machines

- **Quattor in Cloud**
  - What services/tools are needed?
  - How does a machine get instantiated and installed?

- **Quattor Modifications**

Enabling Grids for E-sciencE

- **Elastic Compute Cloud (EC2)**
  - Provides easy interface for allocating and starting machines.
  - Five different machine configurations available.
  - Supports various Linux, OpenSolaris, Windows server.

- **Elastic Block Store (EBS)**
  - Acts as a mountable, persistent disk.
  - Can associate disk with image dynamically at startup.
  - Uses Simple Storage Service (S3) behind the scenes.

- **Elastic IP**
  - Persistent allocation of IPv4 address.
  - Can associate image instance and address dynamically.

- **AWS uses Xen, but there are important differences between AWS and direct use of Xen.**

- **Network configuration:**
  - All machines have private and public IP addresses. User cannot predict or allocate those addresses before starting the machine.
  - Network interface uses the private address for configuration.
  - DNS contains only public address, not private one.
  - IP address can change when using Elastic IP.

- **Installation:**
  - PXE is not supported for installation of a machine.
  - Must start from existing machine image.

- **Kernel:**
  - Must use limited list of supported (Xen-enabled) kernels.

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Quattor Server (HTTP)
quattor.stratuslab.org

Profiles
Packages

Machine profile

WN x1
x1.ec2.com

Quattor client software
Quattor initialization
Profile/key information

Send site configuration

Svn Server
sixsq.com

Site's pan config.

Profile name
SSH key

Firefox (ElasticFox)
mylaptop.org

View of AWS images

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- **Standard quattor server deployed and used in AWS.**

- **Minor modifications for machine initialization:**
  - Create AWS image with basic quattor client software.
  - Add init.d script for initial quattor bootstrapping.
  - "User data" at startup selects image profile.
  - Fold changes into standard quattor distribution?

- **QWG modifications:**
  - Turn off the network configuration.
  - Problems with edg-fmon-agent configuration.

- **Multiple machines can use the same profile:**
  - Easy and clean way to define only one WN profile for a site.
- **Machine names not known at compilation time:**
  - How to link batch server and clients?
  - How to link NFS servers and clients?
  - Allow late binding for some information?
- **Change notifications fail**
  - No link between profile name and machine name.
  - Allow machines to register for changes?
  - Move to "chat room" messaging for changes?
- **Workflow**
  - How to manage image disks, IP addresses, etc.?
  - How to manage machine lifecycle?