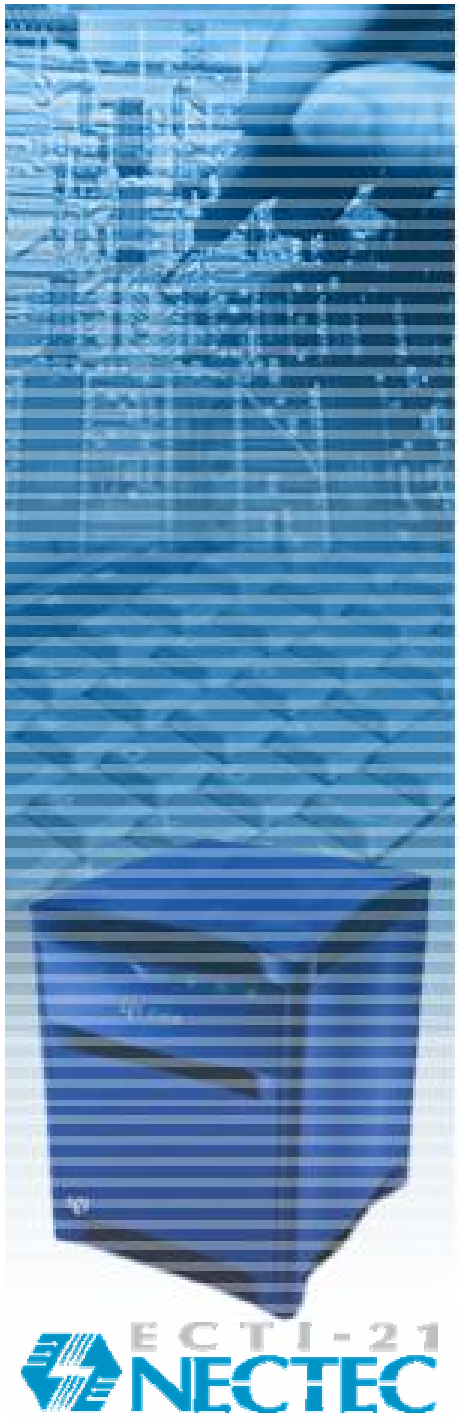

Thailand Grid Certificate Authority

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Outline

- NECTEC Grid Infrastructure
- About APGrid PMA
- Thailand Grid Certificate Authority
- Future Work

About NECTEC

- **National Electronics and Computer Technology Center**
- **Government Research Institute**
- **Under National Science and Technology Development Agency (NSTDA) , Ministry of Science and Technology**
- **Missions:**
  - Research, development, design, and engineering of Electronics and ICT technologies
  - Technology transfer to industries
  - Human resources development for Electronics and ICT technologies
  - Technology-related infrastructure and policy development

NECTEC Grid Infrastructure

- **Main Cluster Computer**
  - 33 nodes Rocks Cluster
  - 3.2 TB storage
  - ~200 GFlops

- **Grid supporting system**
  - MDS (GT4 starting in Jan 2006)
  - Resource Broker (Starting in Apr 2006)
  - *Thailand Grid CA System (Started in July 2005)*

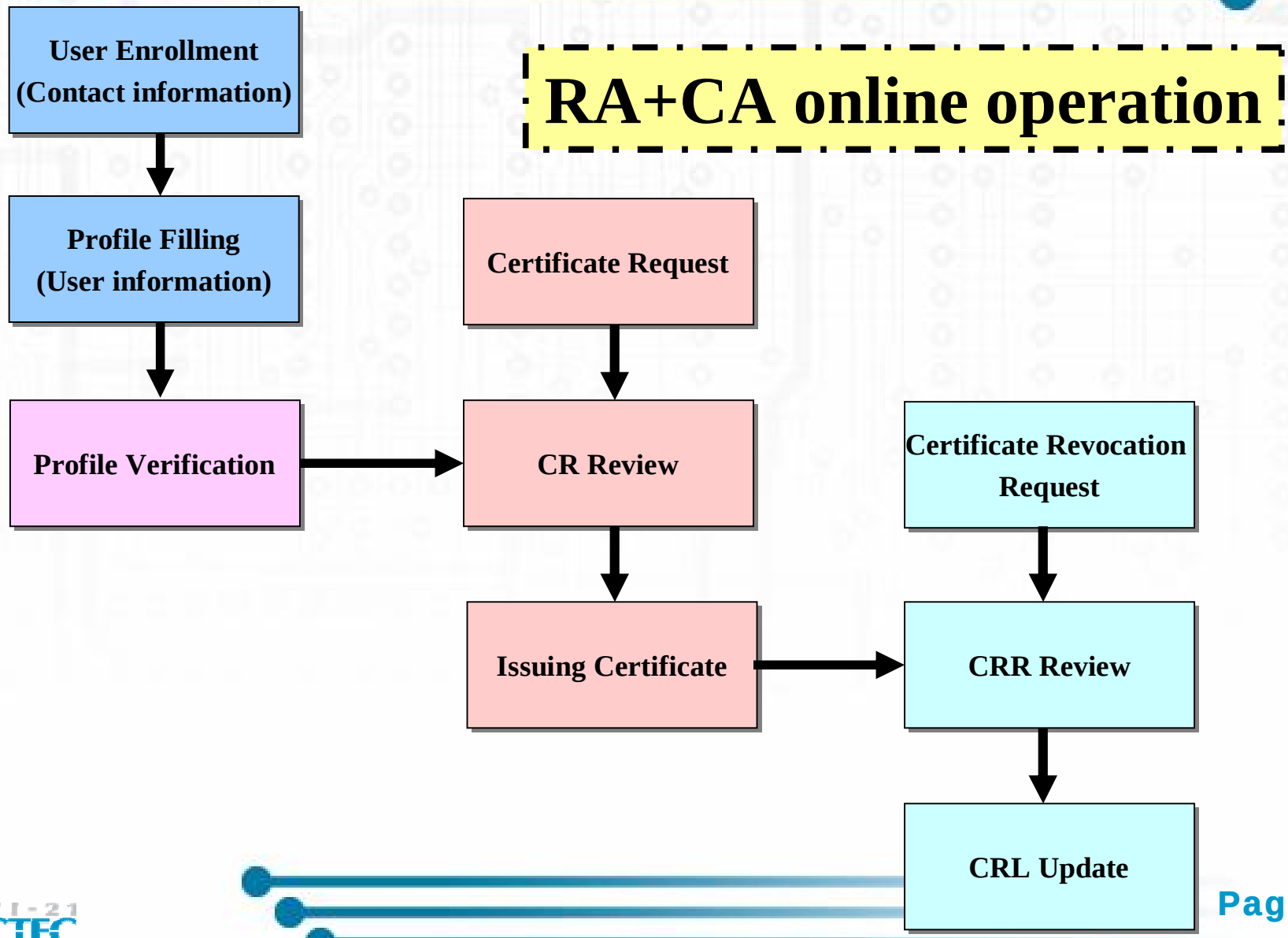
About APGrid PMA

- **Supports Grid communities in Asia Pacific to implement a common trust domain across organizations.**
- **Coordinates Public Key Infrastructure for use with Grid authentication**
- **NECTEC joined APGrid PMA in 2005**

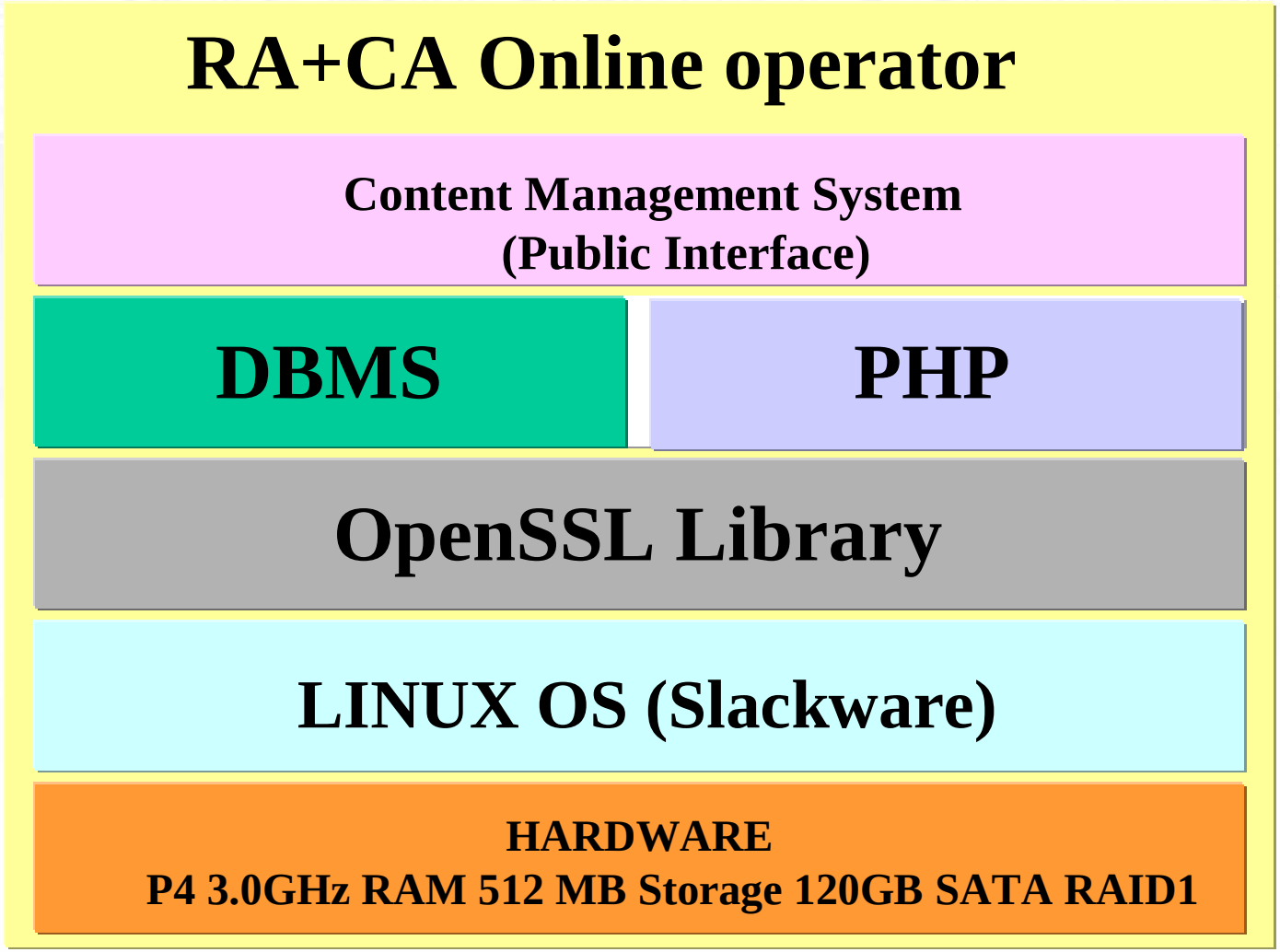
About Thailand Grid CA

- **A project designed to set up a CA for Thailand Grid resources**
- **Two Phases:**
  - Experimental Phase (Use for NECTEC Grid Community only)
  - Production Phase (Use for Thailand Grid Community)
- **Thailand Grid CA operates under APGrid PMA's policy**

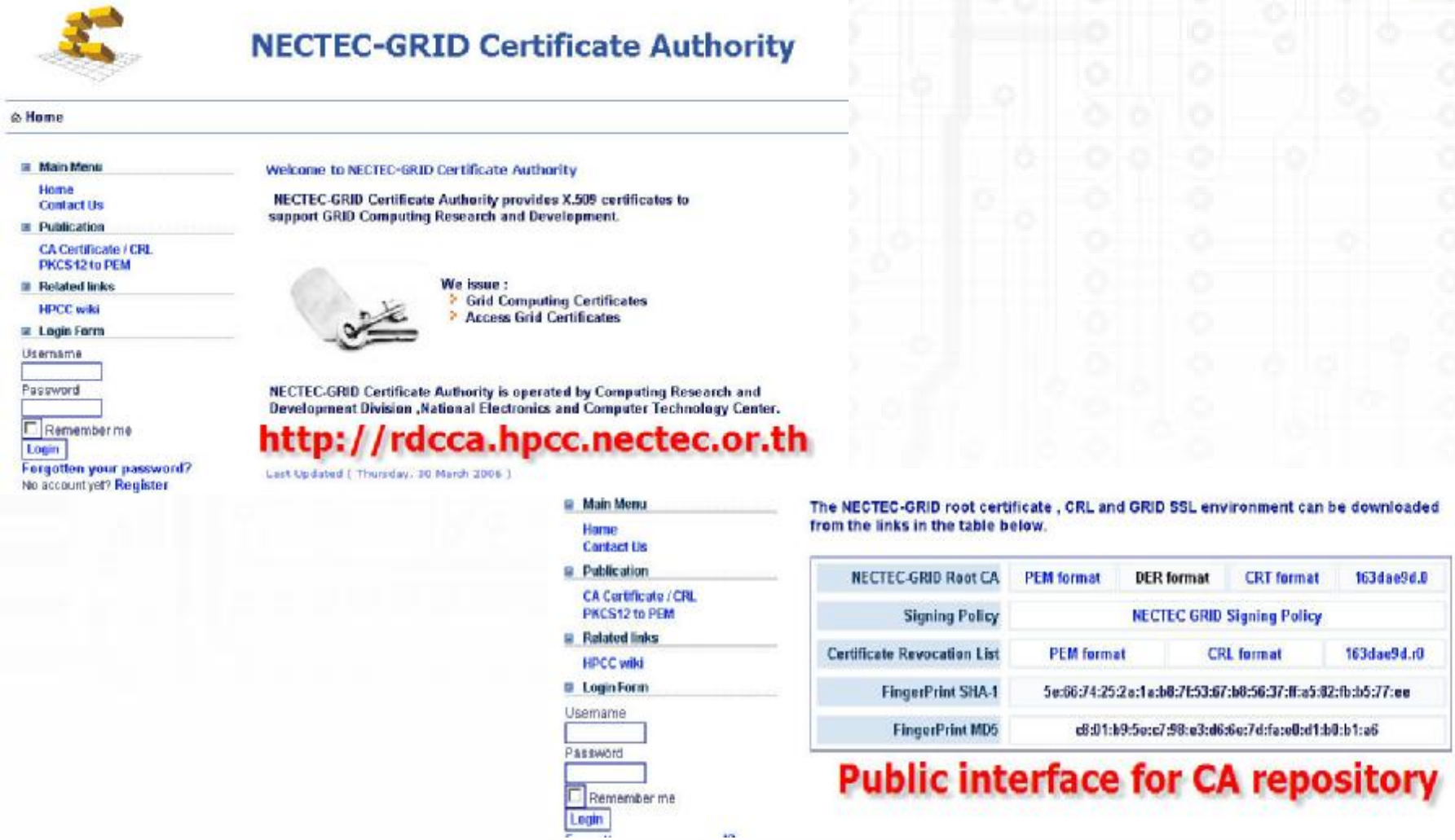
Experimental Phase



Hardware & Software Stack



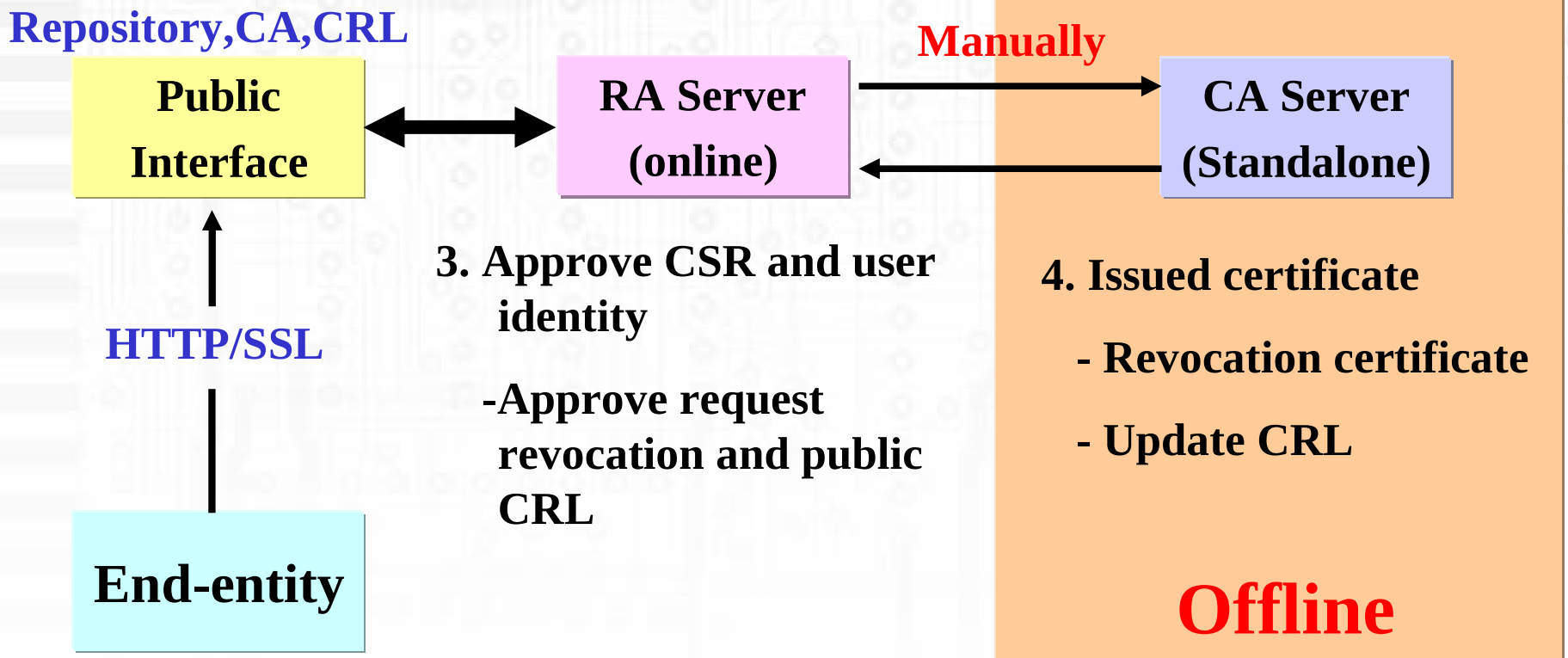
Experimental CA Public Interface



Production Phase

- **Open CA is used for implementing full CA functionality:**
  - Public interface (enrollment , repository)
  - RA
  - CA
- **Installation Environments**
  - Two dedicated servers:
  - Public interface and RA server:
    - Fedora Core 4 OS
    - RA requires SSL
  - CA server (offline):
    - Fedora Core 4 OS
    - CA requires SSL

Production Phase Operator



1. Send request via application form or email

2. Generate CSR and enroll to RA by paste it in public interface

Certificate Authority

- **Single CA issuing end-entity certificate for:**
  - Users in Thailand Grid Community
  - Thailand Grid Community hosts and services
  - Private-key (2048bits) stored in the CA server hard-disk
  - The server is off-line and accessing to the server room is restricted
  - Backup symmetric encryption passphrase known only to two staff members
  - Subject format:

C=TH , O=NECTEC, OU=NECTEC-GOC, CN=NECTEC GRID CA

Registration Authority

- **Approve user's identity (application form or face-to-face meeting)**
- **Send user enrollment request to the CA correctly**
- **Send user revocation request to the CA quickly.**

End-entity certificates

- **Thailand Grid Community user certificates are used for dynamic delegation through proxy-certificate issuance.**
  - Subject format:

    C=TH, O=NECTEC, OU=NECTEC-GOC, CN= <Full user name>

- **Thailand Grid Community host/LDAP certificates are used in client to host mutual authentication.**
  - Subject format:

    C=TH, O=NECTEC, OU=NECTEC-GOC, CN= host/<FQDN>

    C=TH, O=NECTEC, OU=NECTEC-GOC, CN= ldap/<FQDN>

Enrollment user certifcates

- **Thailand Grid CA user certificate enrollment:**
  - User generates key-pair and CSR (PKCS#10) using grid-cert-request on globus toolkit
  - User sends application form to RA
  - User sends CSR via a public interface
  - RA operator goes through the validation process
  - CA operator issues the certificate

Enrollment host certificates

- **Thailand Grid CA host certificates enrollment:**
  - Grid system administrator generate key-pair and CSR using grid-cert-request tool on globus toolkit
  - Grid system administrator sends CSR via paste it in enrollment form in the public interface
  - RA Operator goes through the validation process
  - CA Operator issues the certificate

Revocation and CRL's

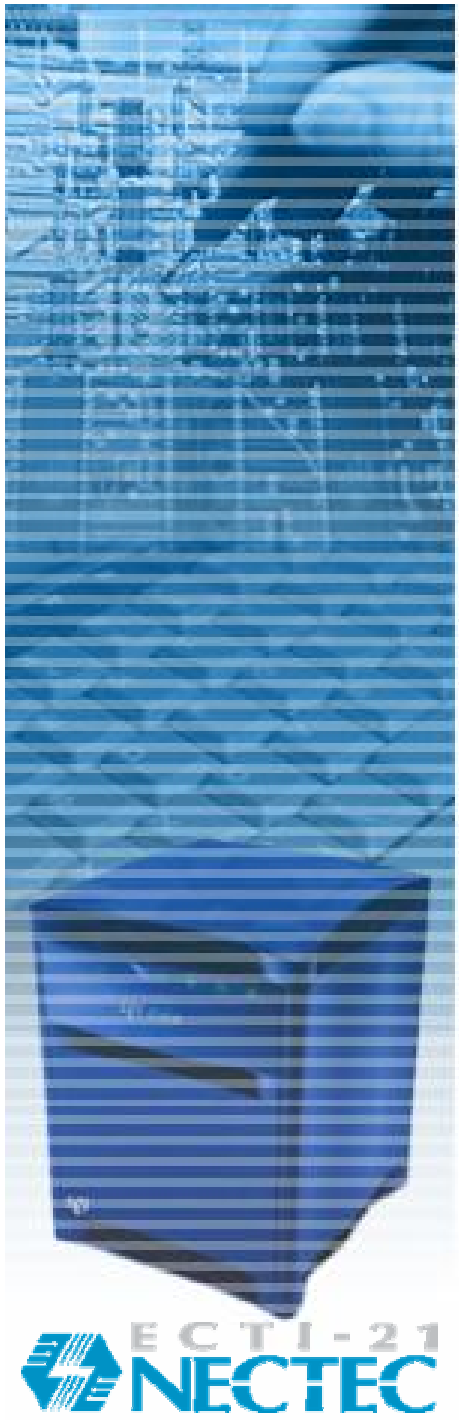
- **PIN-based revocation in the public interface requested by user, approved by the RA operator and performed by the CA operator**
- **Direct revocation requested and approved by the RA operator and performed by the CA operator**
- **CRL's are issued with 30 days validity period whenever a certificate is revoked or one day before the current CRL expiration**

Public Interface

- **The public interface serves as a repository via HTTP for the following data:**
  - End-entity certificates
  - CRL's
  - CP/CPS
  - CA Certificate, Signing policy and grid-mapfile

Future Work

- **Write CP/CPS documents**
- **Creation of production RA and CA in NECTEC RDC**
- **Testing certificates on Thailand Grid Community environment**



Thanks