CARNet
HRVATSKA AKADEMSKA I ISTRAŽIVAČKA MREŽA

Implementation of open-source PKI solution

CARNet PKI

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Contens:

- 1. PKI in 60 sec
- 2. PKI solution in CARNet
- 3. Future development

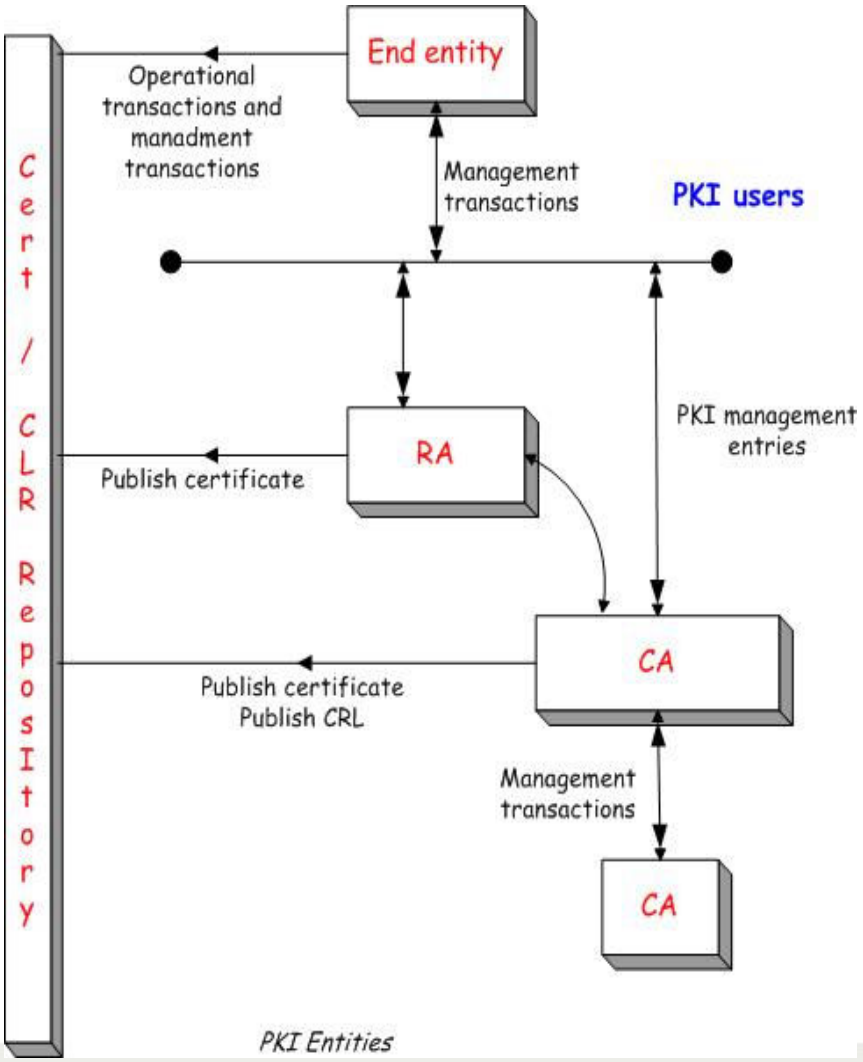
1. PKI in 60 sec

- Public key infrastructure (X.509: RFC 2459 & updated RFC 3280),
- strong hierarchical organization,
- Term used to describe:
  - policies, standards, software requirements...
  - regulation of public & private pairs of keys
- System of digital certificates, Certification Authority (CA) & Registration Authority (RA)
- off-course: use of cryptography!

Uses of PKI:

- SSL, IPsec, HTTPS – communication & transaction
- S/MIME & PGP – email security
- SET – value exchange
- Benefits:
  - Reduces transactional processing expenses,
  - Reduces the complexity of security systems,
  - Notarization (contracts, emails...)
  - In software distribution (signing applications...)

Parts of PKI infrastructure:



- Node for management (database)
- CA (Certification Authority)
- RA (Registration Authority)
- Repository (LDAP)
- Public part for users of PKI (CSR, certificate signing request)
- SCEP (*from ver. 0.9.2-RC-6*)

2. PKI in solution in CARNet

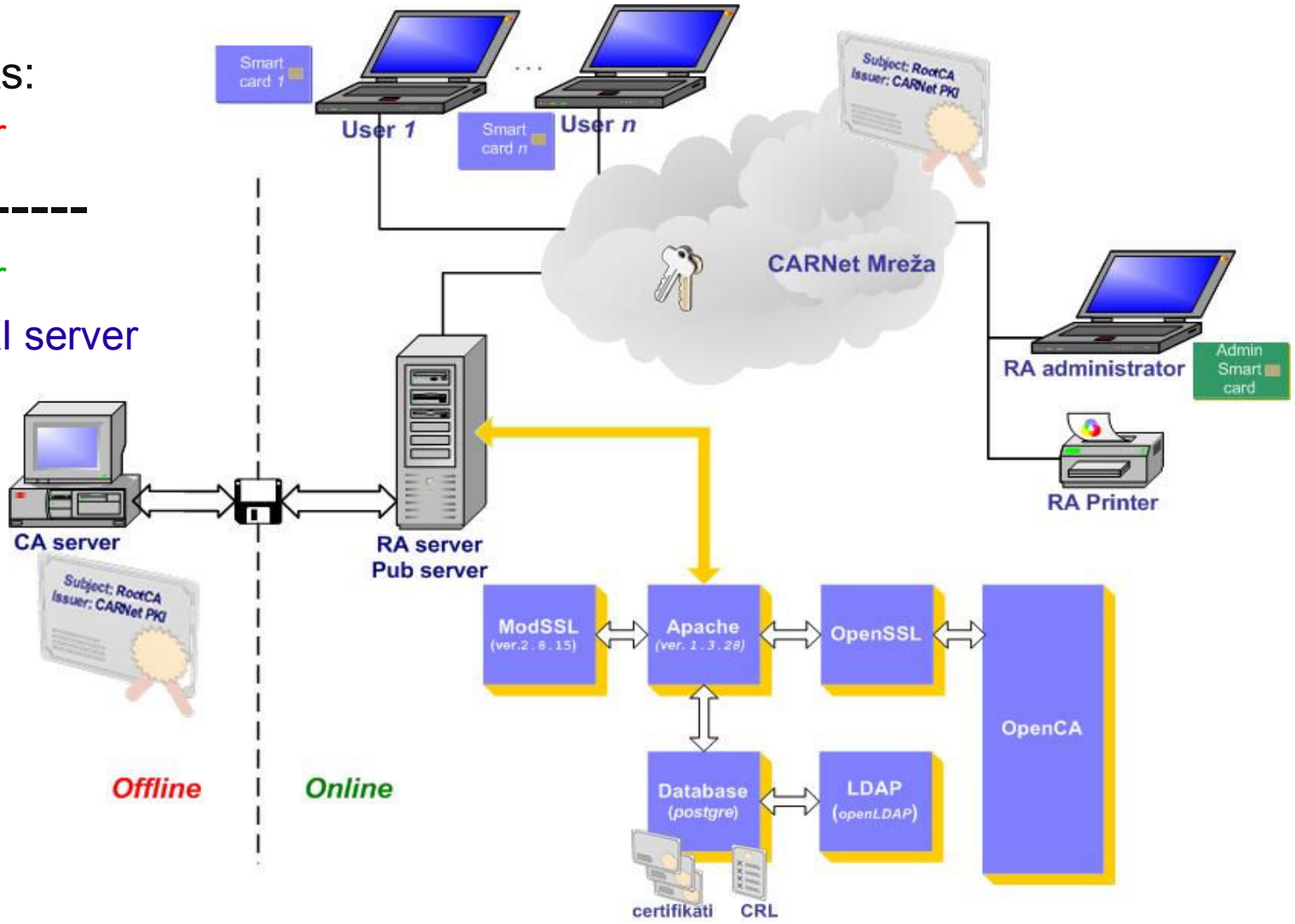
Why implement PKI in CARNet?

- Goals:
  - Improvement in secure communications
  - Replacements of students ID cards (X-ica)
  - Unique and simplified method of student identification (for authentication and authorization...)
- Implementation of “Open Source PKI solution”: OpenCA (why?)
  - Totally free (open-source),
  - Customization for CARNet needs,
  - but still in development phase...
  - based on X.509
- Integration with smart card for better security

Topology of CARNet PKI

- PKI elements:
  - CA server

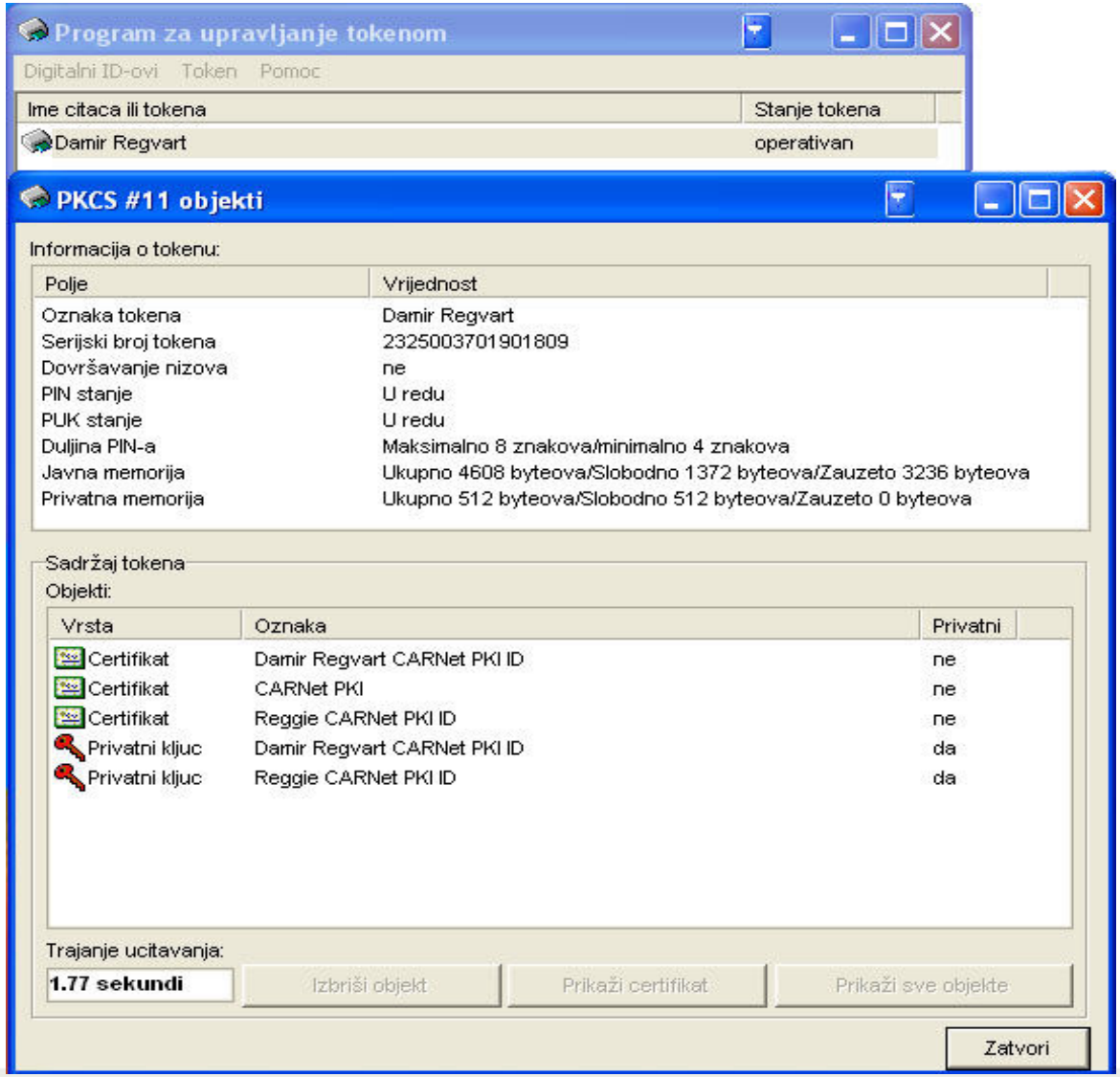
  - RA server
  - Public PKI server



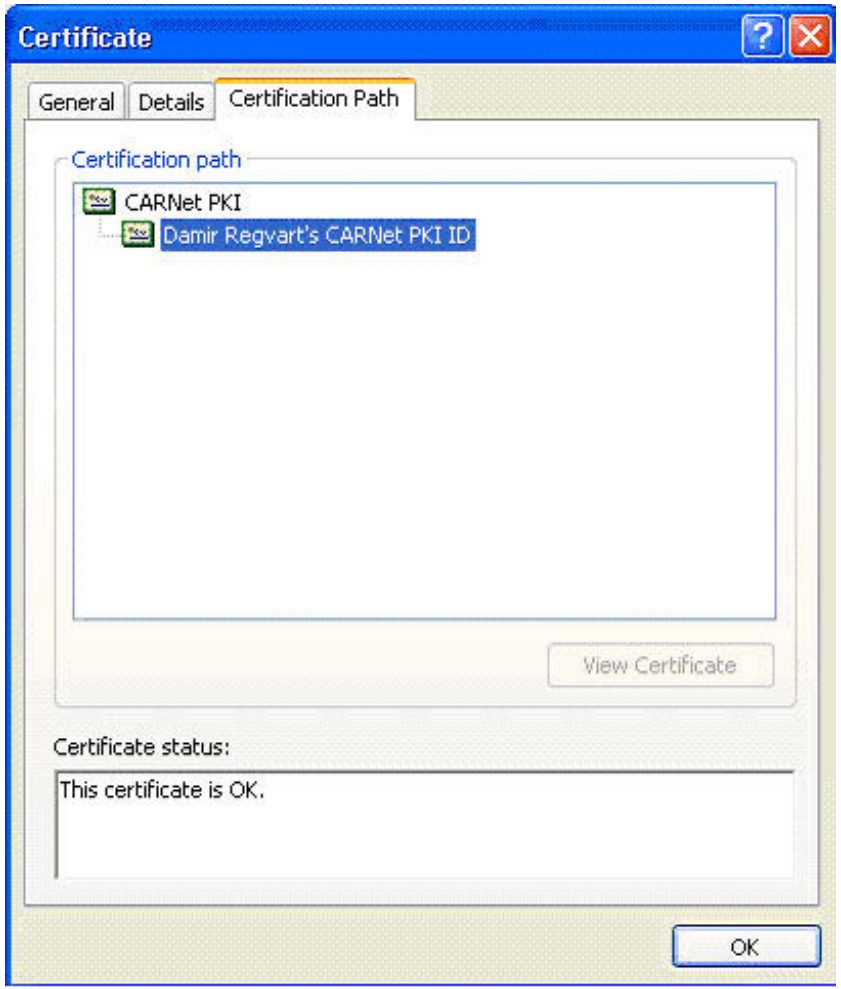
What user recives from CARNet PKI?

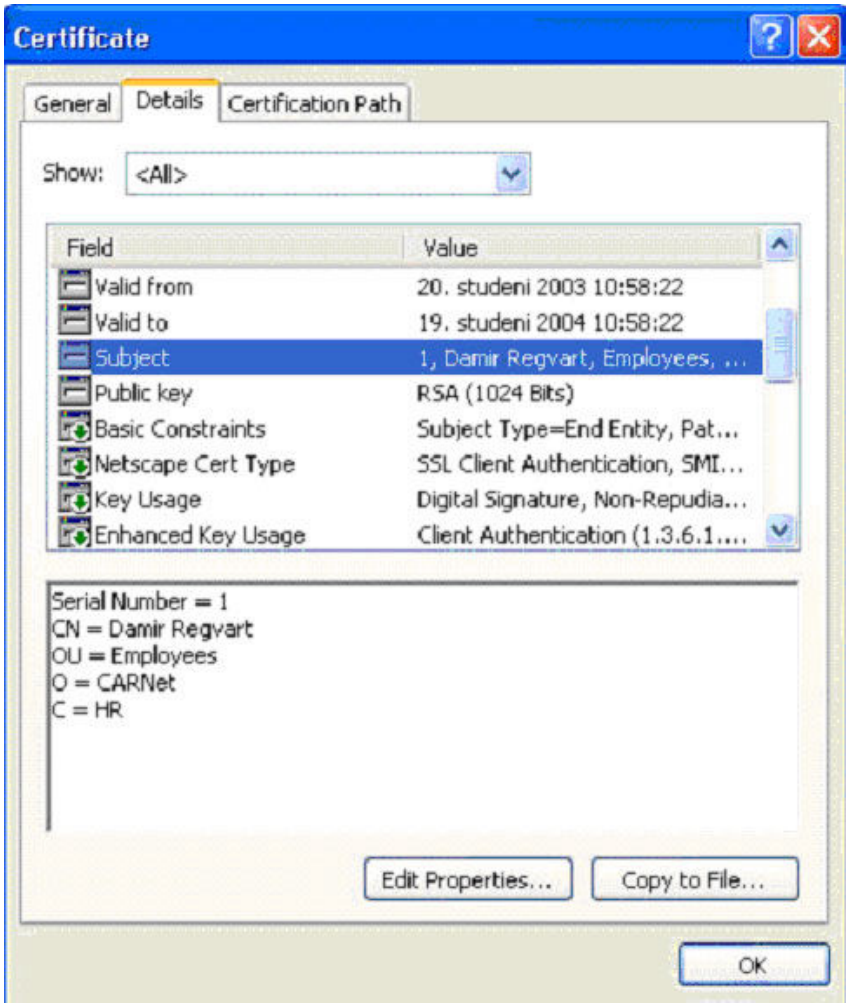
- Private key,
- Public key,
- Certificate,
- Smart card (iCAR),
- Reader for smart card,
- Tools for management of smart card.

Contents of smart card



Contents of CARNet certificate:





What could user do with CARNet PKI?

- Testers of CARNet PKI are CARNet workers :-)
- PKI in CARNet is in test phase...
- What can users do:
  - Signing e-mails (S/MIME),
  - Signing documents,
  - Logon to Windows domain,
  - Logon to secure WebPages (**https**) & internal CARNet aplications,
  - Logon to VPN concentrator (usin PKI to establish VPN connection),
  - Logon to computer (*Linux enabled*)

3. Future development of CARNet PKI

- Finale goal:
  - Replacement of students ID cards with smart cards,
  - Unique and simplified method of identification for authentication and authorization
  - Personal e-ID (*in 5 years*)
- Future CARNet PKI projects:
  - Digitally sign every server in CARNet network,
  - PKI pilot implementation project in selected Campus...
  - Working on AAI project for CARNet network
  - Working in OpenCA project

For more information go to:

- Carnet PKI web page: http://pki.rdlab.carnet.hr
- OpenCA project: http://www.openca.org
- M.U.S.C.L.E: http://www.linuxnet.com/
- Public-Key Infrastructure (X.509) (pkix) charter: http://www.ietf.org/html.charters/pkix-charter.html

Q & A...