European AFS meeting 2009

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Wolfgang A. Gehrke

DIA

Welcome and Overview

Contents

ROMA TRE UNIVERSITÀ DEGLI STUDI

Welcome to the workshop

WiFi connectivity, documents, requests

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- 13 years AFS workshop using German language
- 2008 first time using English language in Graz, Austria
- 2009 second workshop in Rome, Italy

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Participants: Austria, Czech Republic, Germany, Great Britain, Italy, USA

Industry: E4 company (close to Modena, Italy)
SUN Microsystems

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Who made it possible

CASPUR	coffee breaks Andrei Maslennikov, Federico Gorelli
DIA	central organization, coffee break contribution, visit S. Paolo Wolfgang Gehrke, Franco Milicchio
ENEA	video streaming Giovanni Bracco, Francesco Beone
E4 company	coffee break contribution Matteo Spatola, Ludovica Delpiano
INFN	conference material, funding of guests, organization support Sandro Angius, Claudio Bisegni, (and Fabrizio Manfredi)
ROMA3	locality and network Paolo Cursi, Paolo Capozucca
SUN	bus tour Walter Moriconi

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Invited guests

Jeffrey Altman

- elder, gatekeeper, developer
- *Windows* port

Derrick Brashear

- elder, *gatekeeper*, developer
- AIX/Mac OS X/Irix/Solaris port

Since 2004 "AFS & Kerberos Best Practices Workshop" in the USA: bring together users and administrators.

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- branch of the AFS source by IBM $\rightsquigarrow$ OpenAFS $\approx$ 2000
- AFS and DCE/DFS products withdrawn 2005

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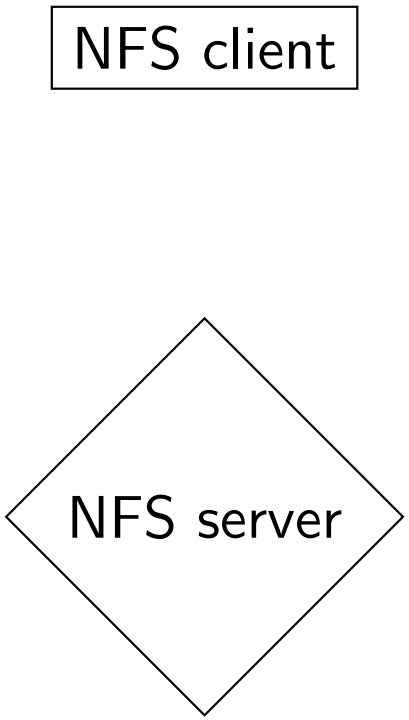
File space organization with volumes



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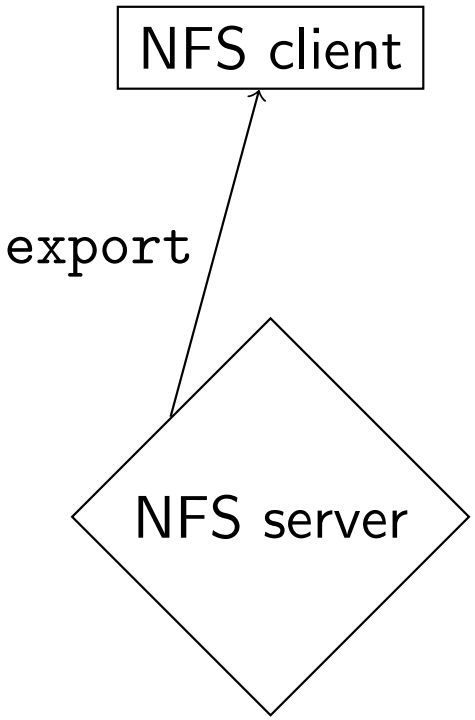

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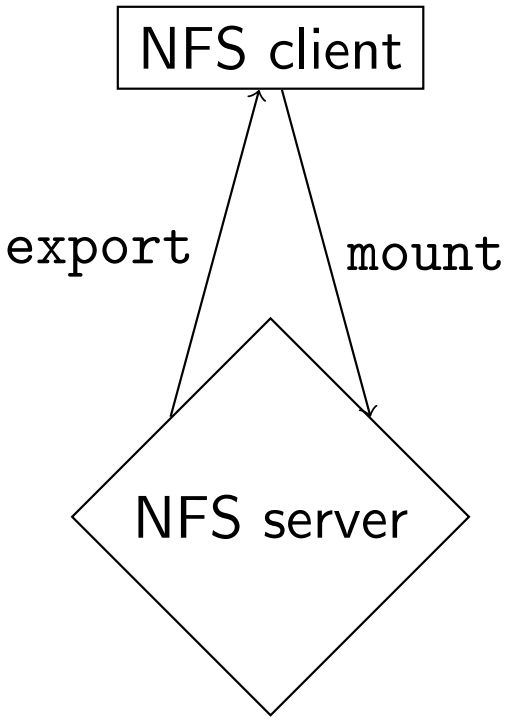

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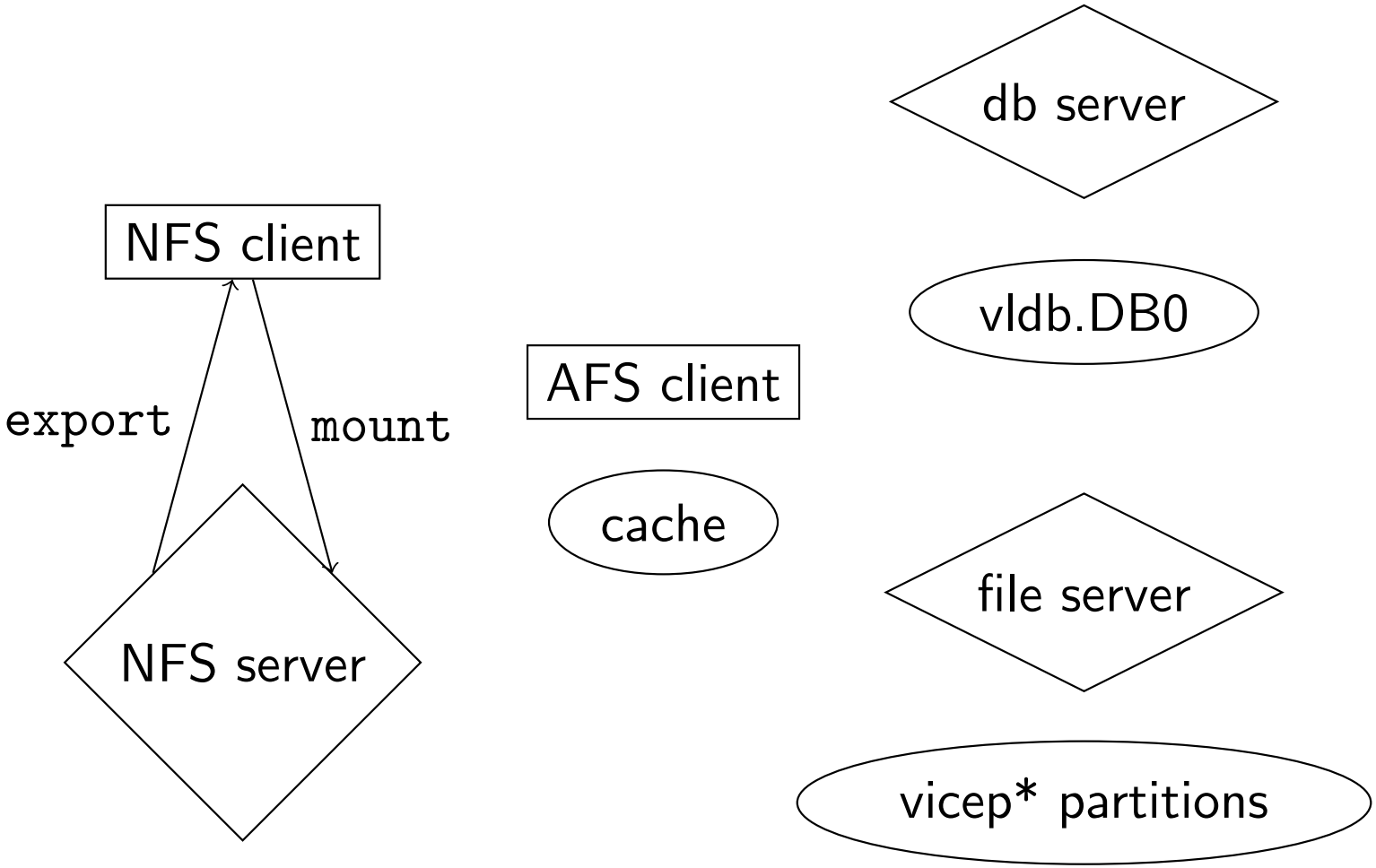

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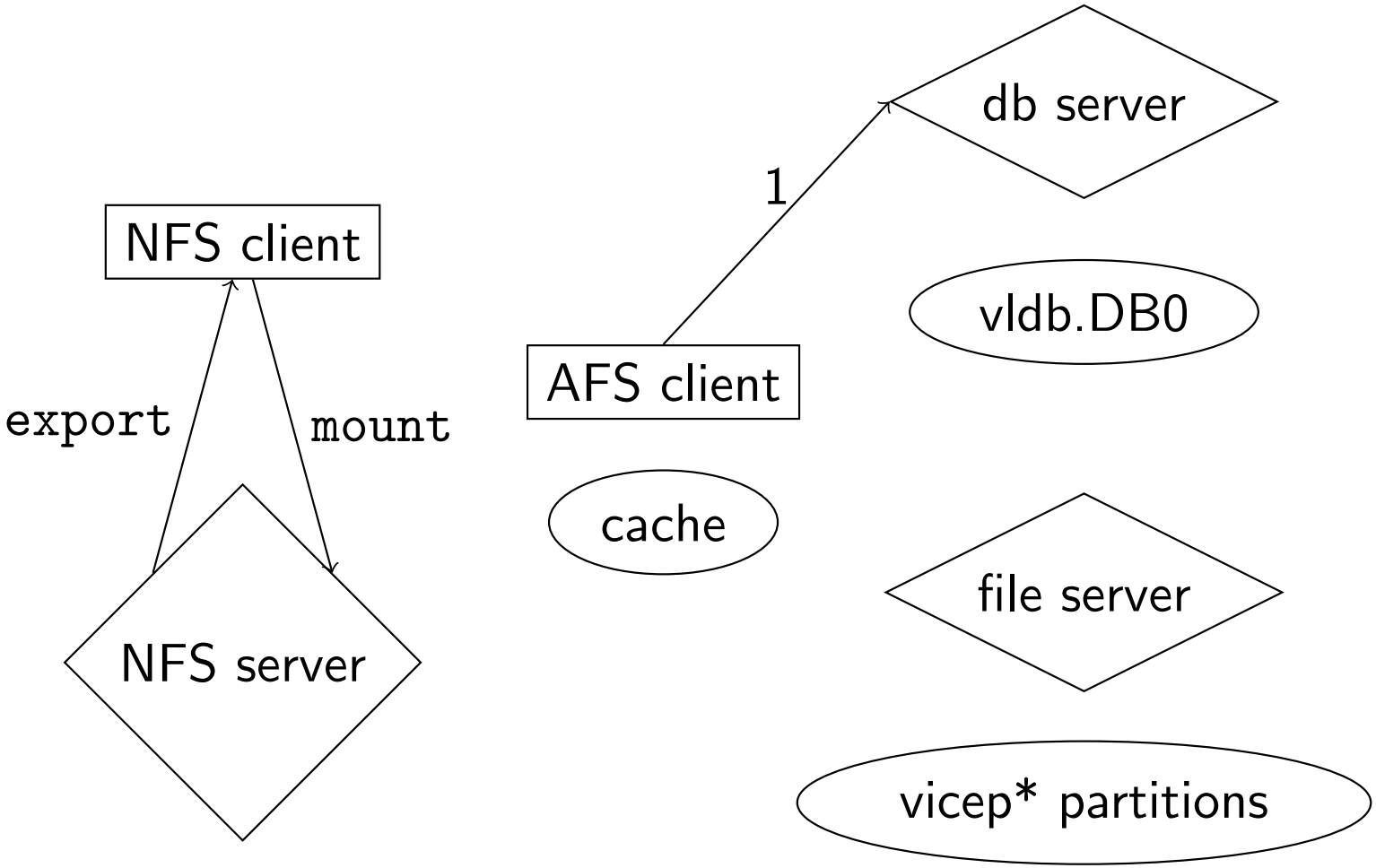

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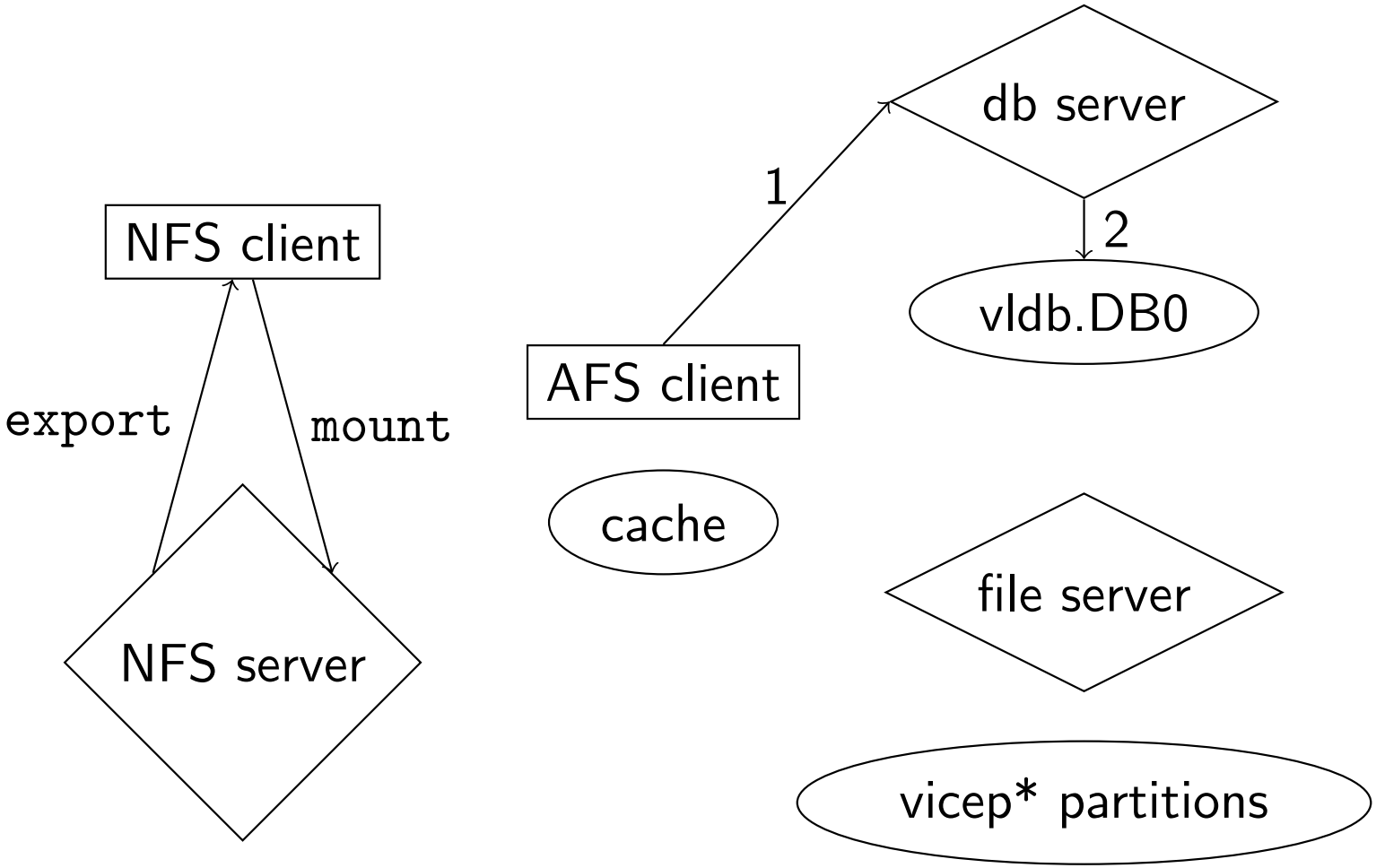

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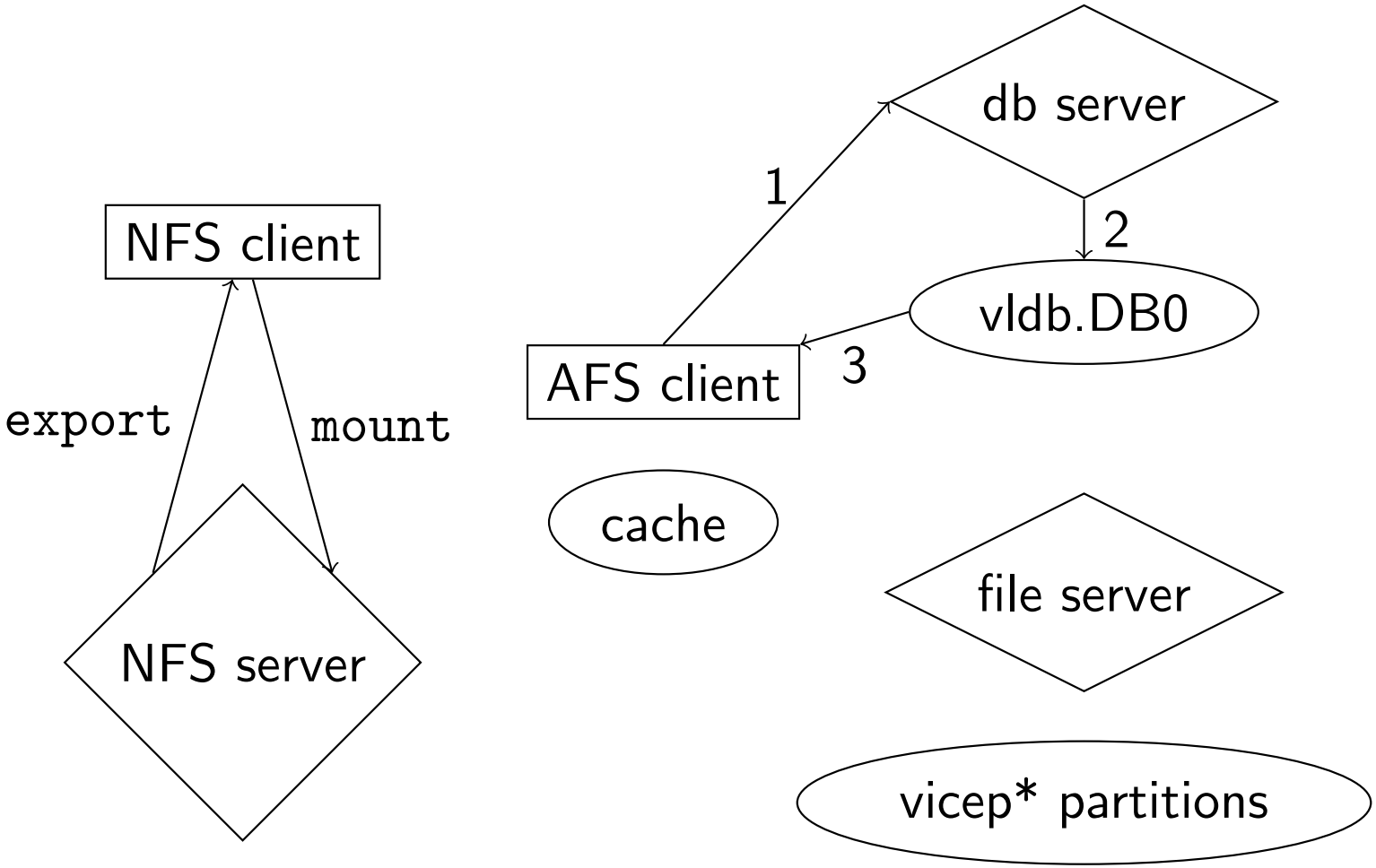

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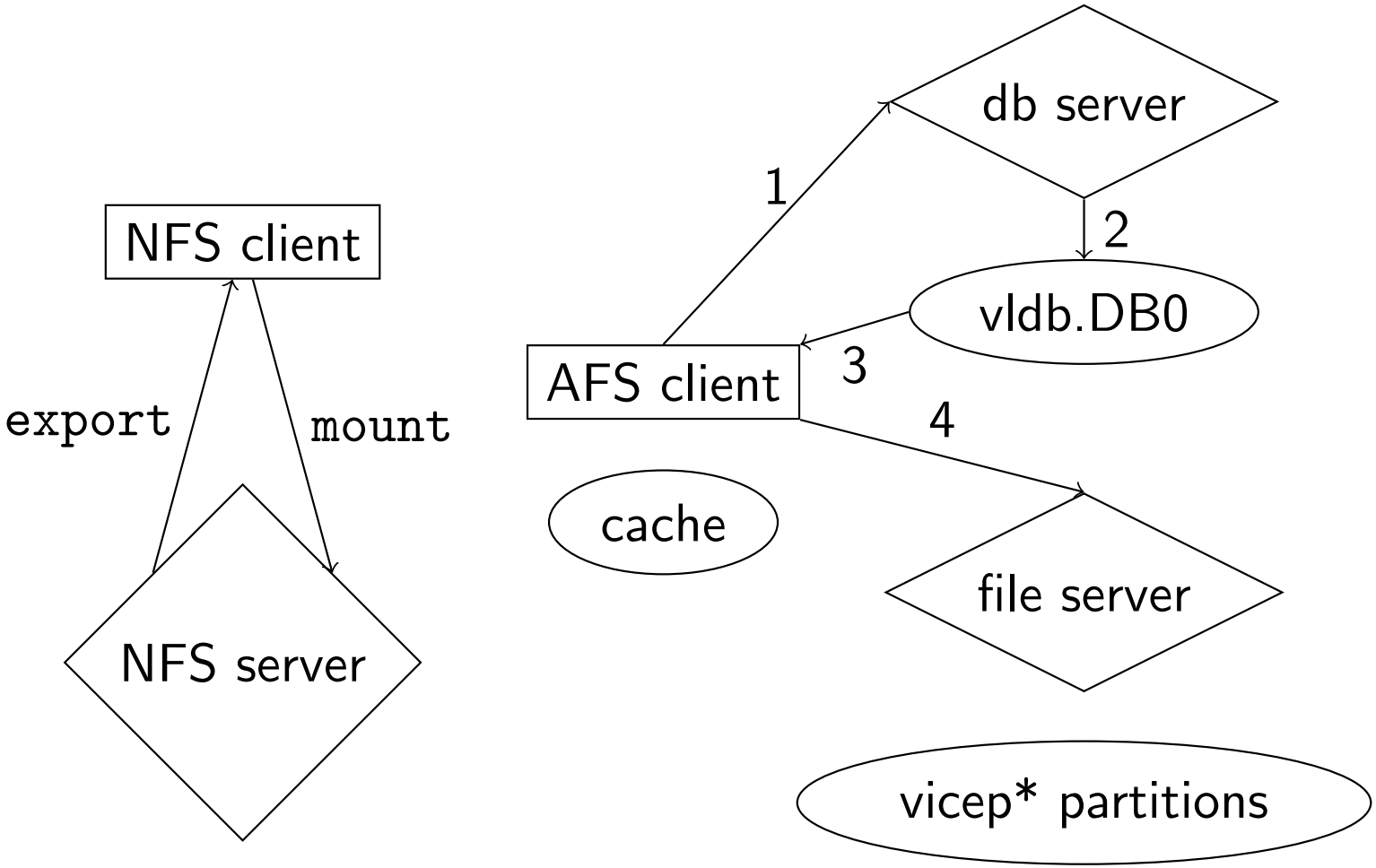

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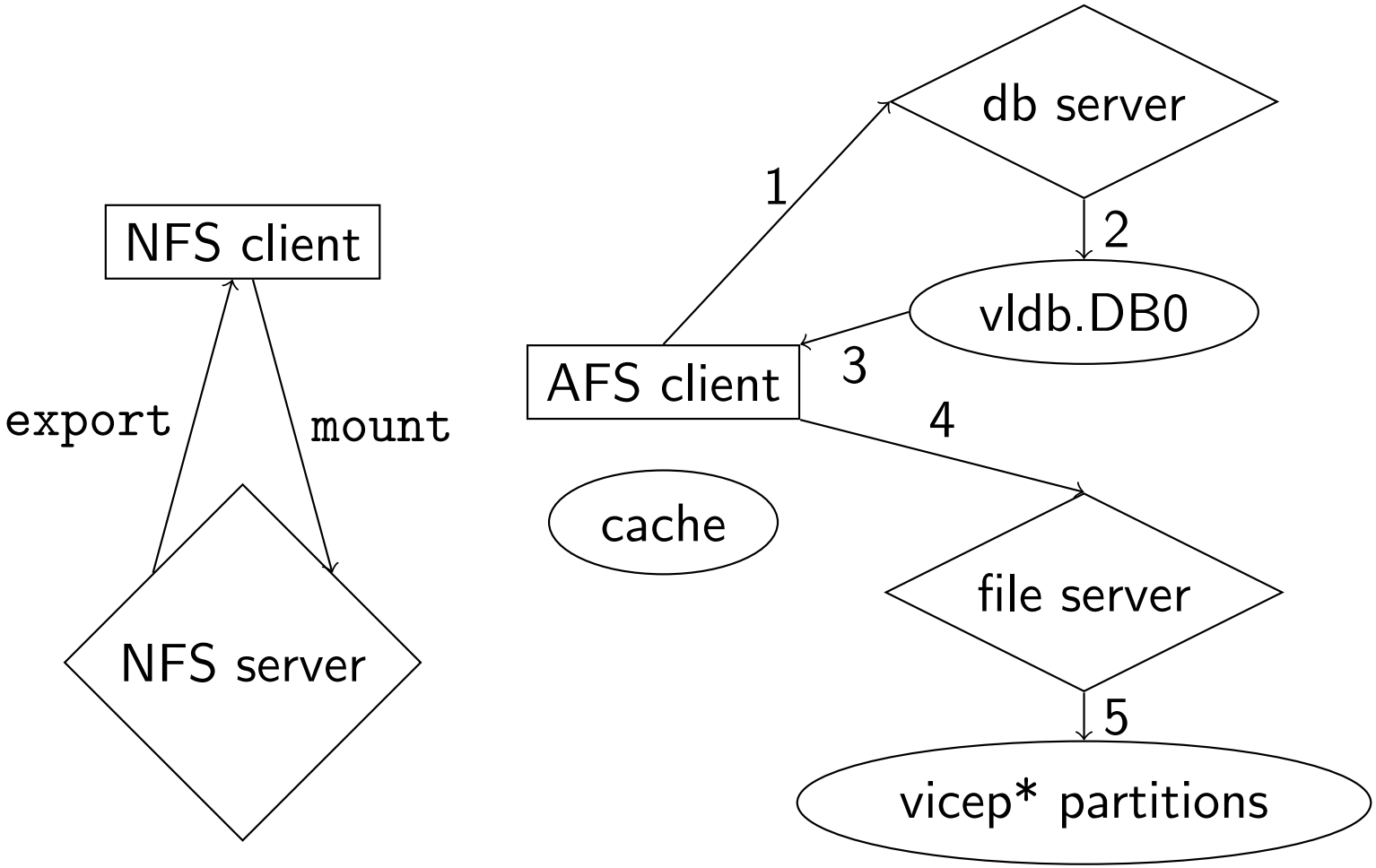

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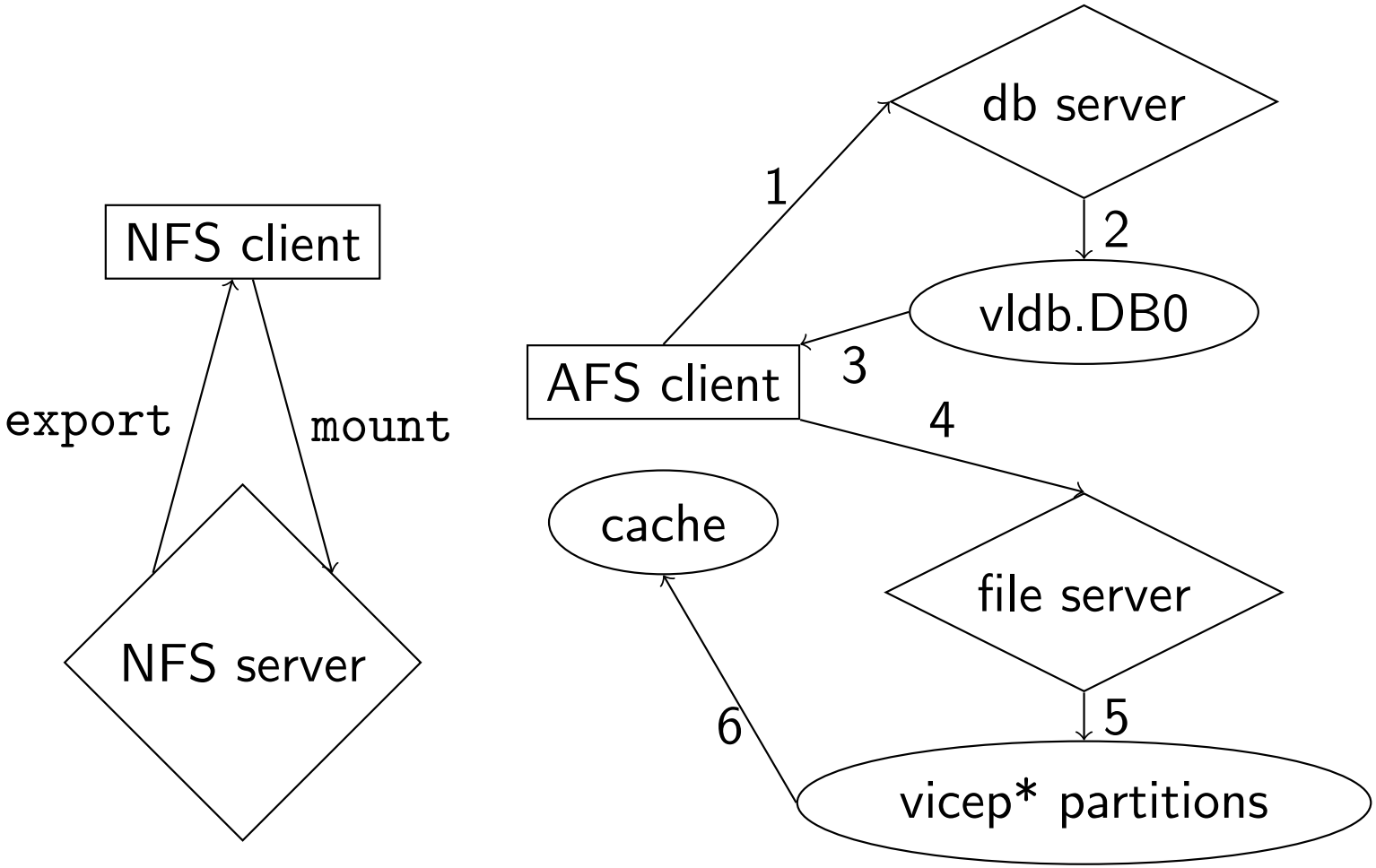

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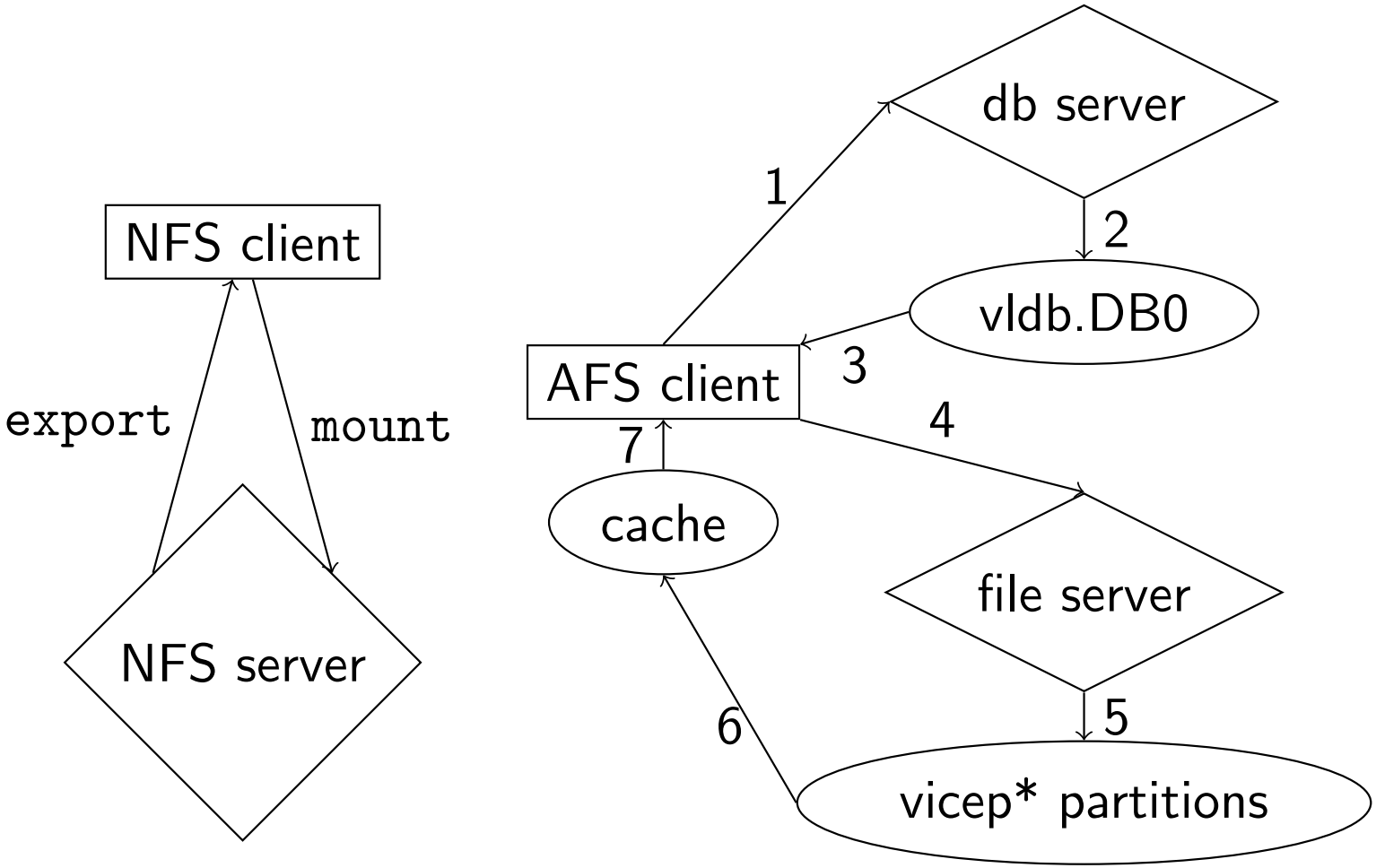

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Note:
1. administration from arbitrary client!
2. no down-time on server exchange!

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vos convertROtoRW repair method by lost RW volume

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Some context

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Distributed Services with OpenAFS for Enterprise and Education

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in the following:

$\uparrow$ distributed file systems

$\leftrightarrow$ related technology and AFS components

$\downarrow$ local file systems

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In case of replication: remain as long as possible on RO path,
clients do load-balancing between replicas,
explicit RO or RW mounts can interfere.

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AFS servers

data base server	`bosserver`	e.g. 3 or 5, Ubik
		`ptserver, vlserver, buserver`
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Ubik leader-election
sync site

Server and client pairing

afsd	fs: e.g. ACL, mount, quota management
bosserver	bos: e.g. create process instances
buserver / butc:	backup: e.g. volume dump or restore also DB
ptserver	pts: e.g. user and group management
vlserver / volserver	vos: e.g. volume and partition management

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- daemons have a “-help” option
- daemons may have a “-noauth” option
- commands have a “help” subcommand
- commands have a “-noauth” option
- commands may have the “-localauth” option (`KeyFile`)
- commands have a “-cell” option

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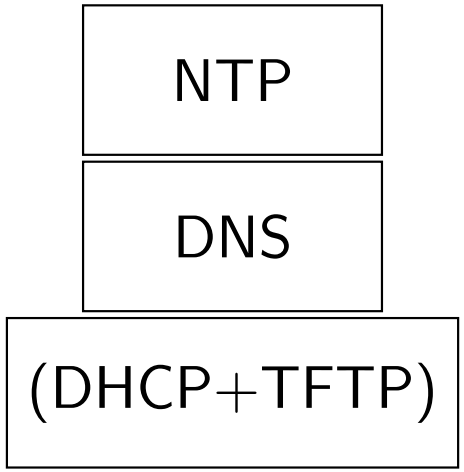
Related services with redundancy



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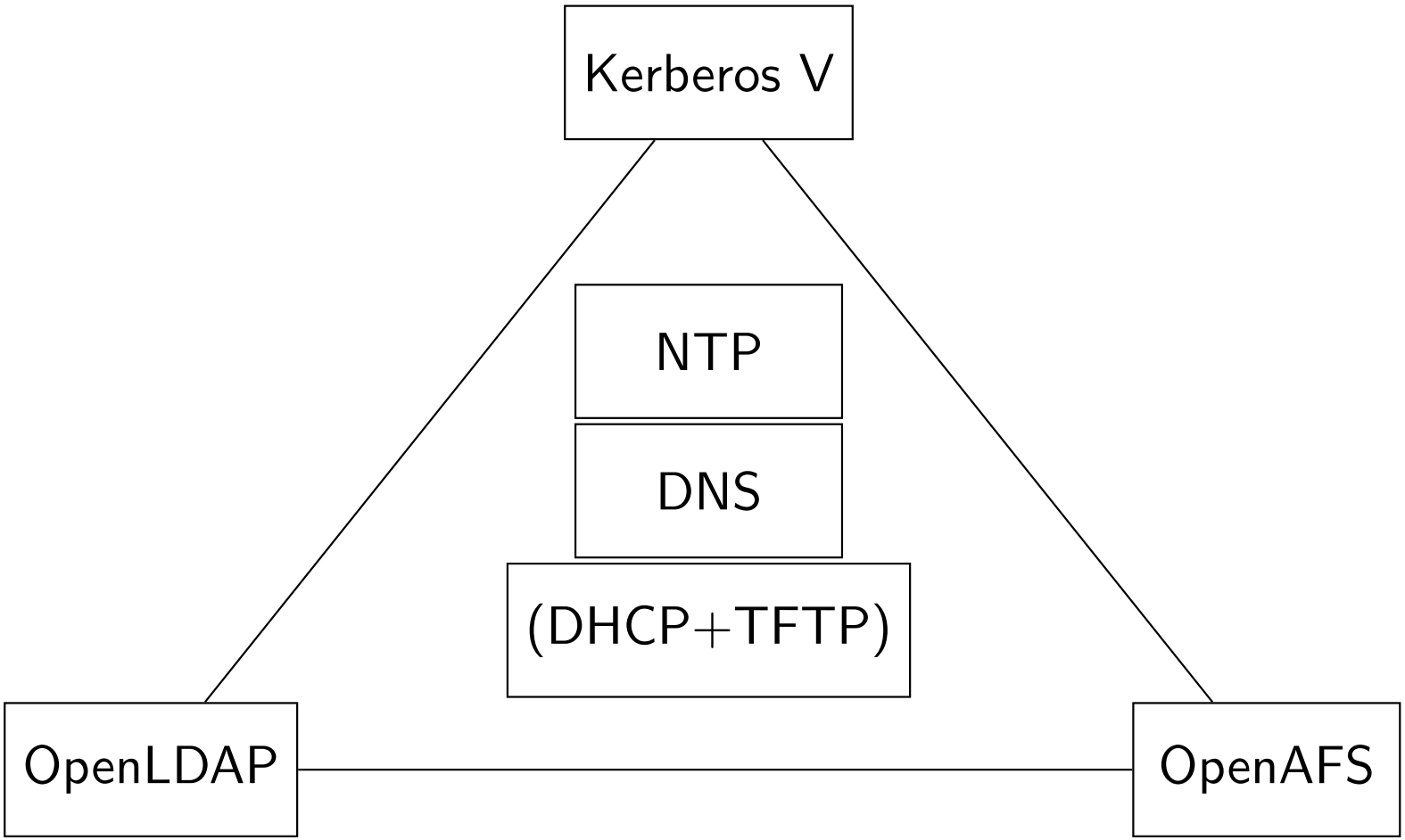

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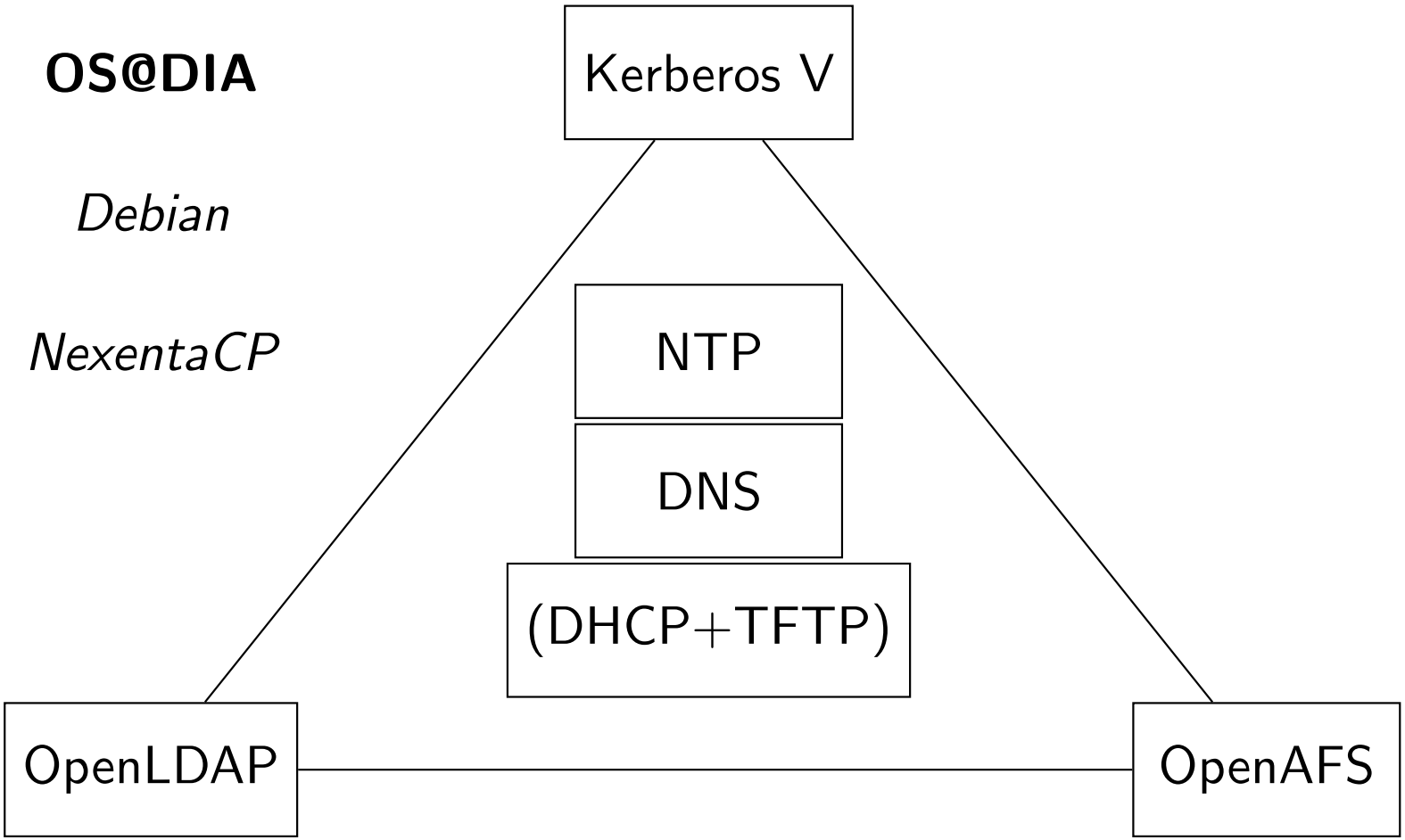

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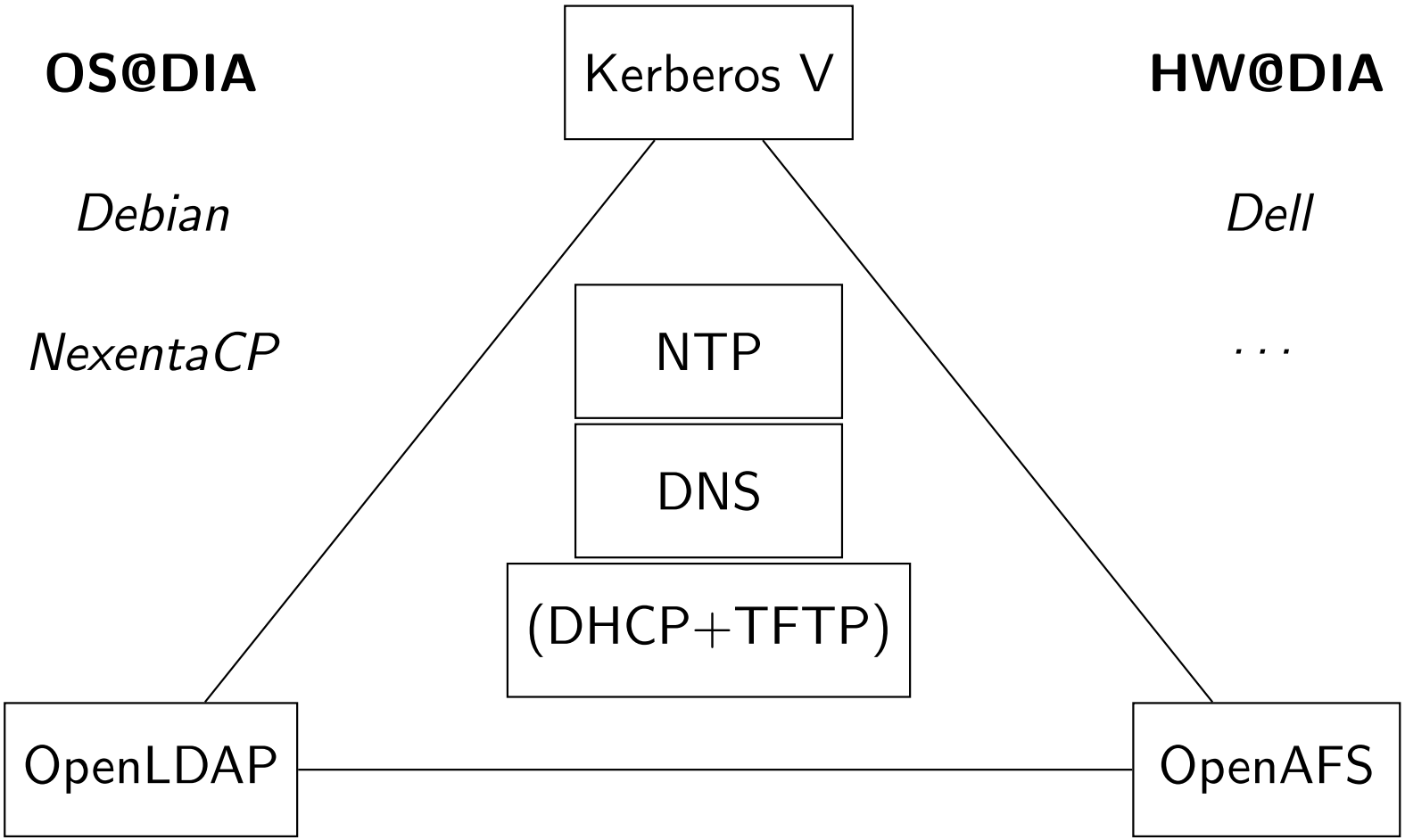

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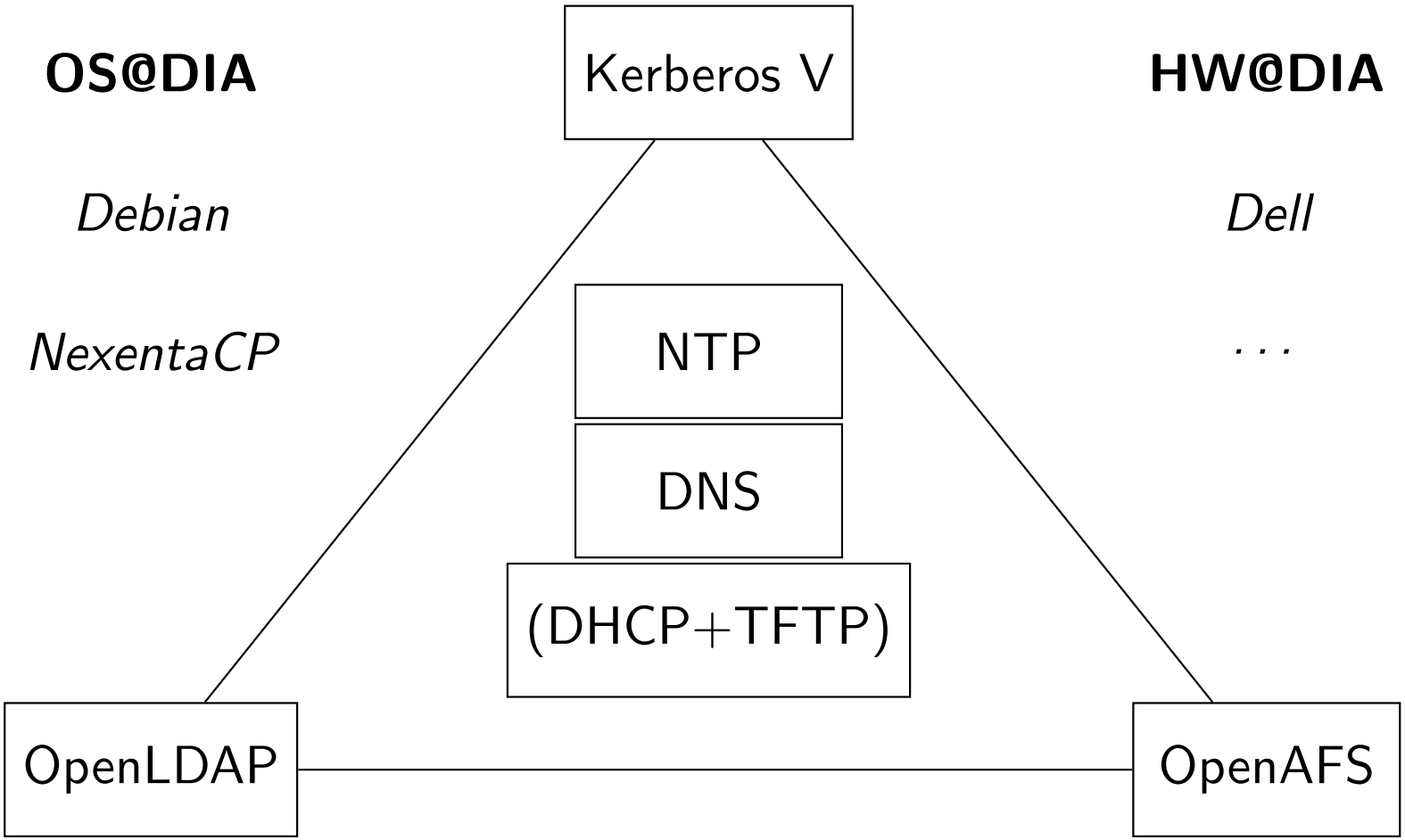

Virtualization *e.g. XEN or VirtualBox*

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Multiple possibilities

Kerberos authentication trusted central third party

- Active Directory
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AFS implementations

- Arla
- OpenAFS
- Transarc legacy

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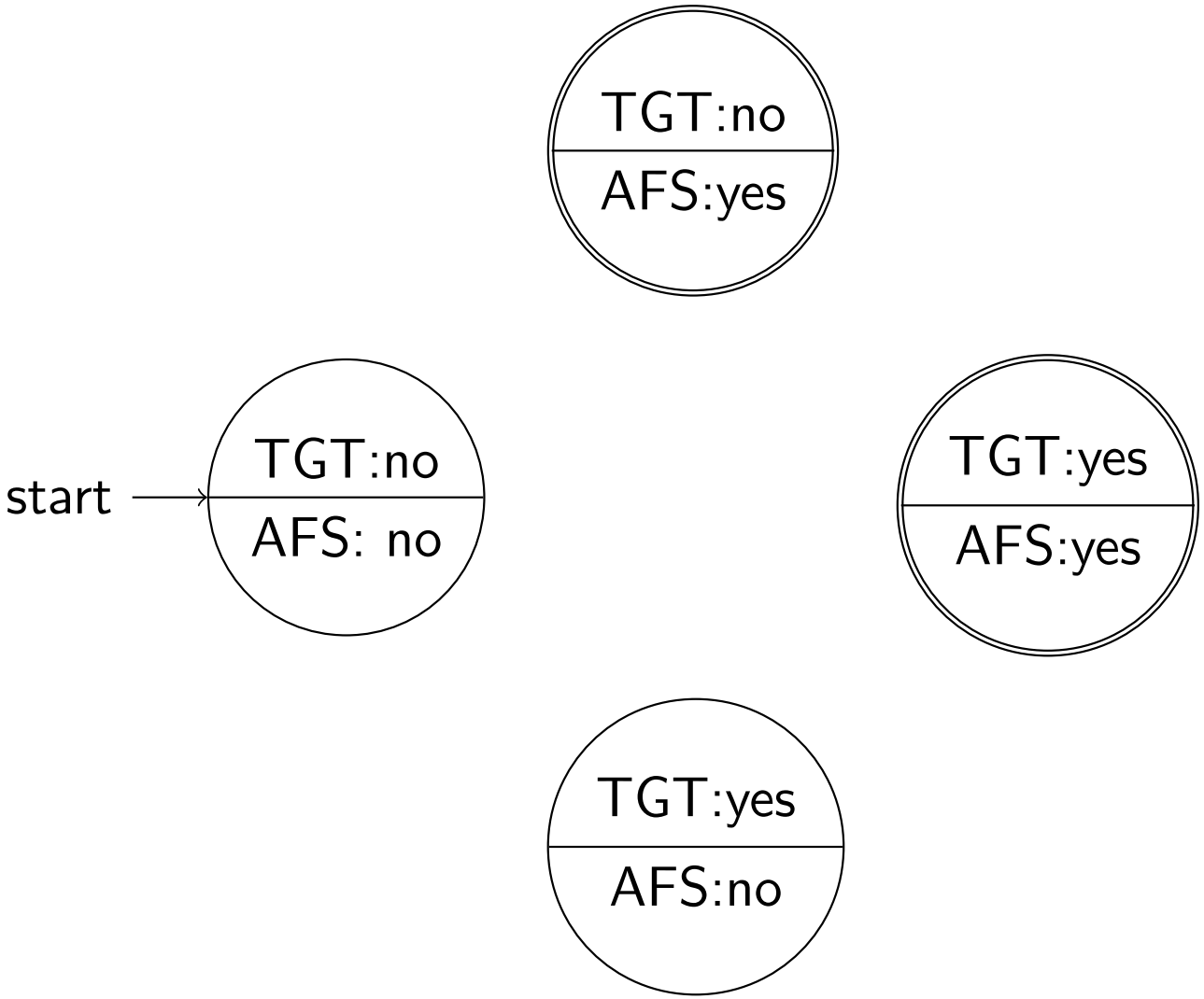
Authentication process



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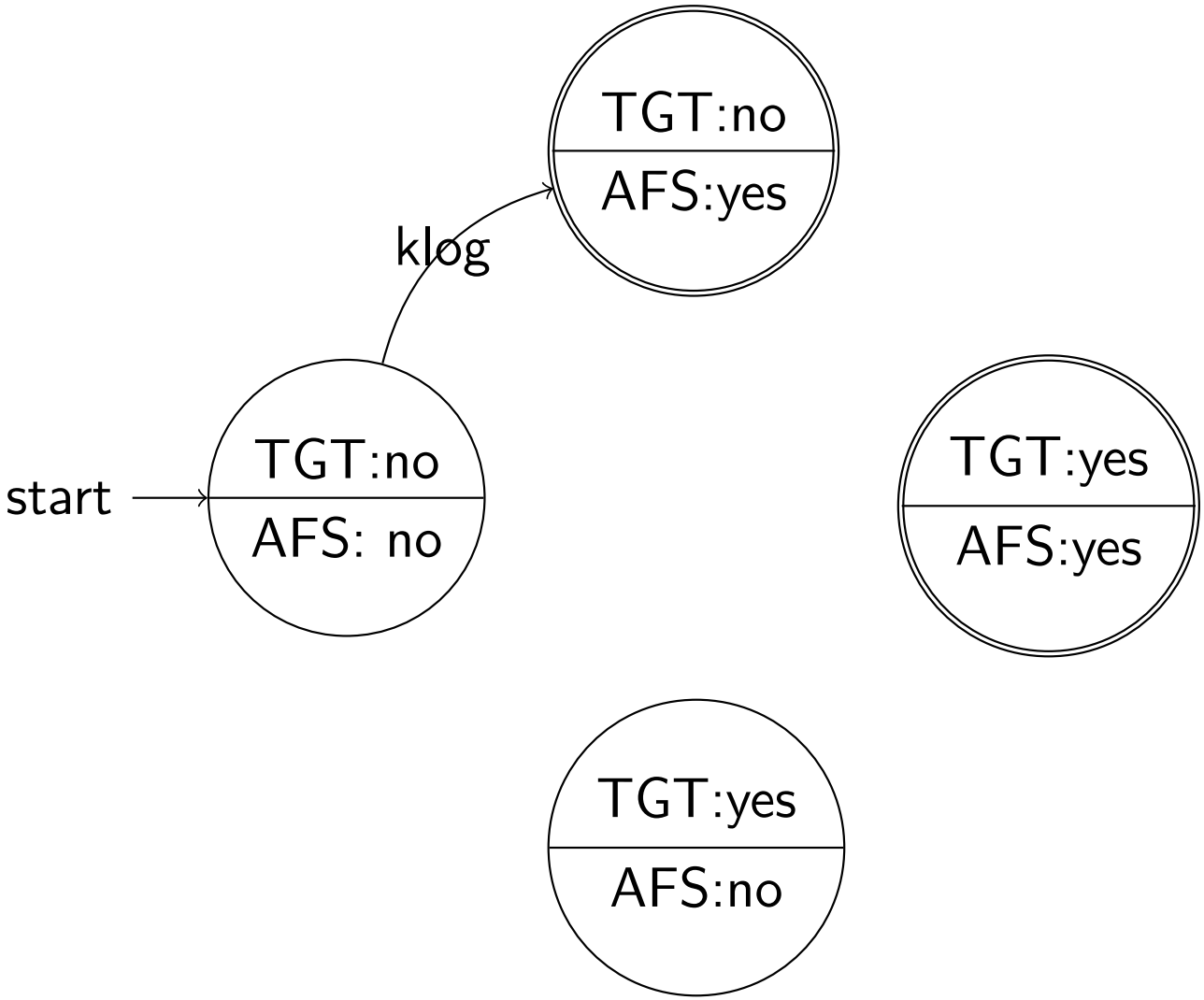

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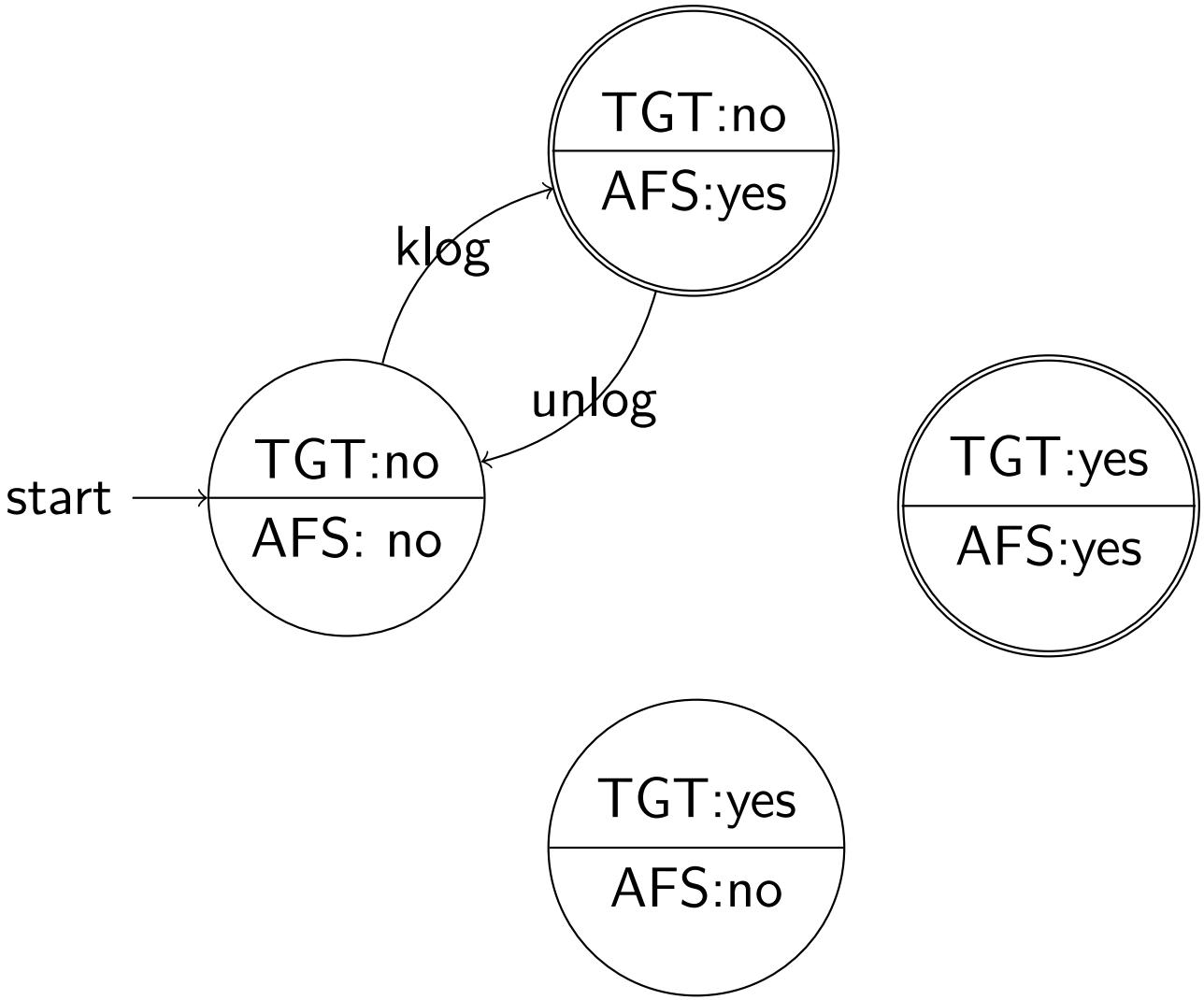

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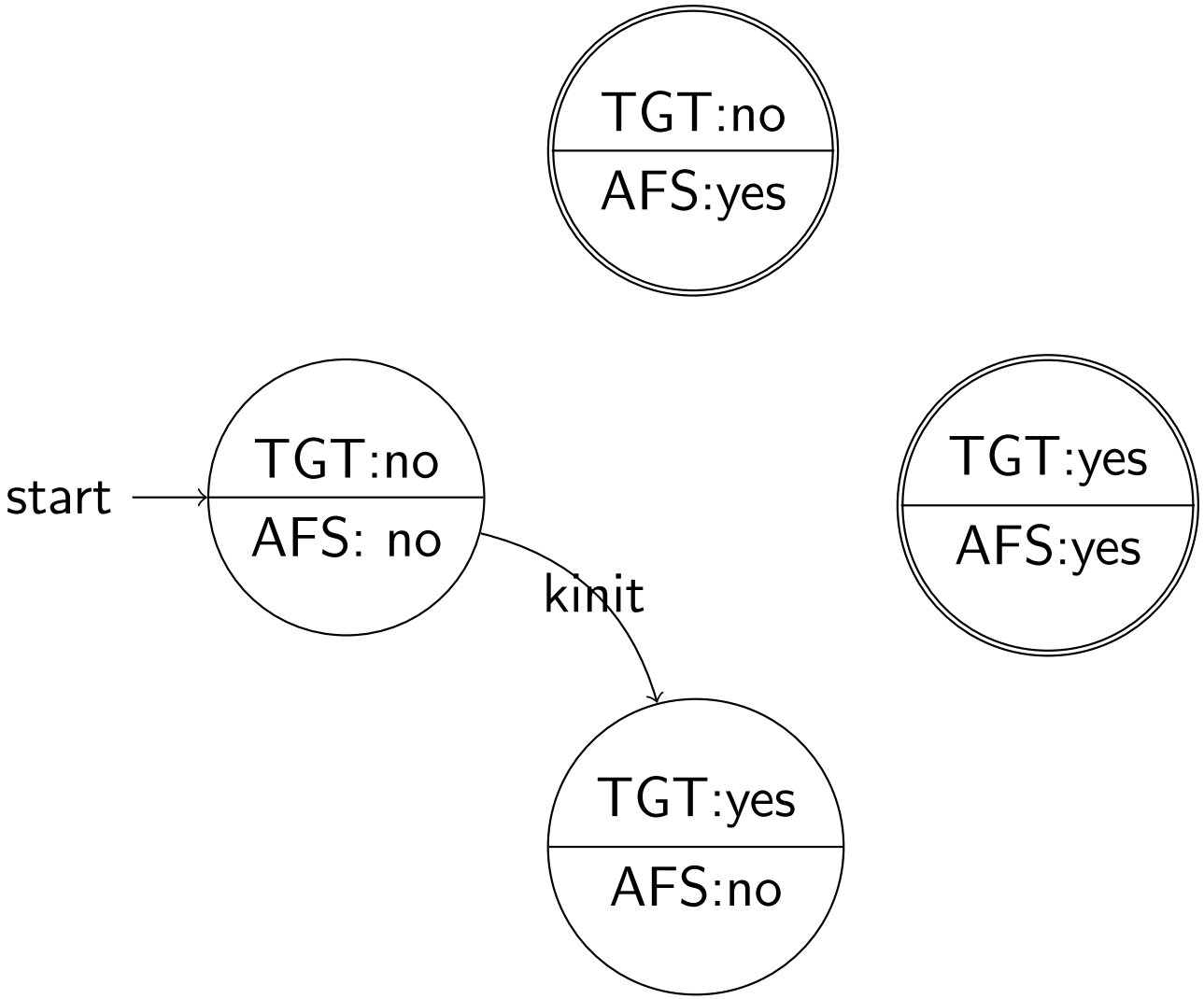

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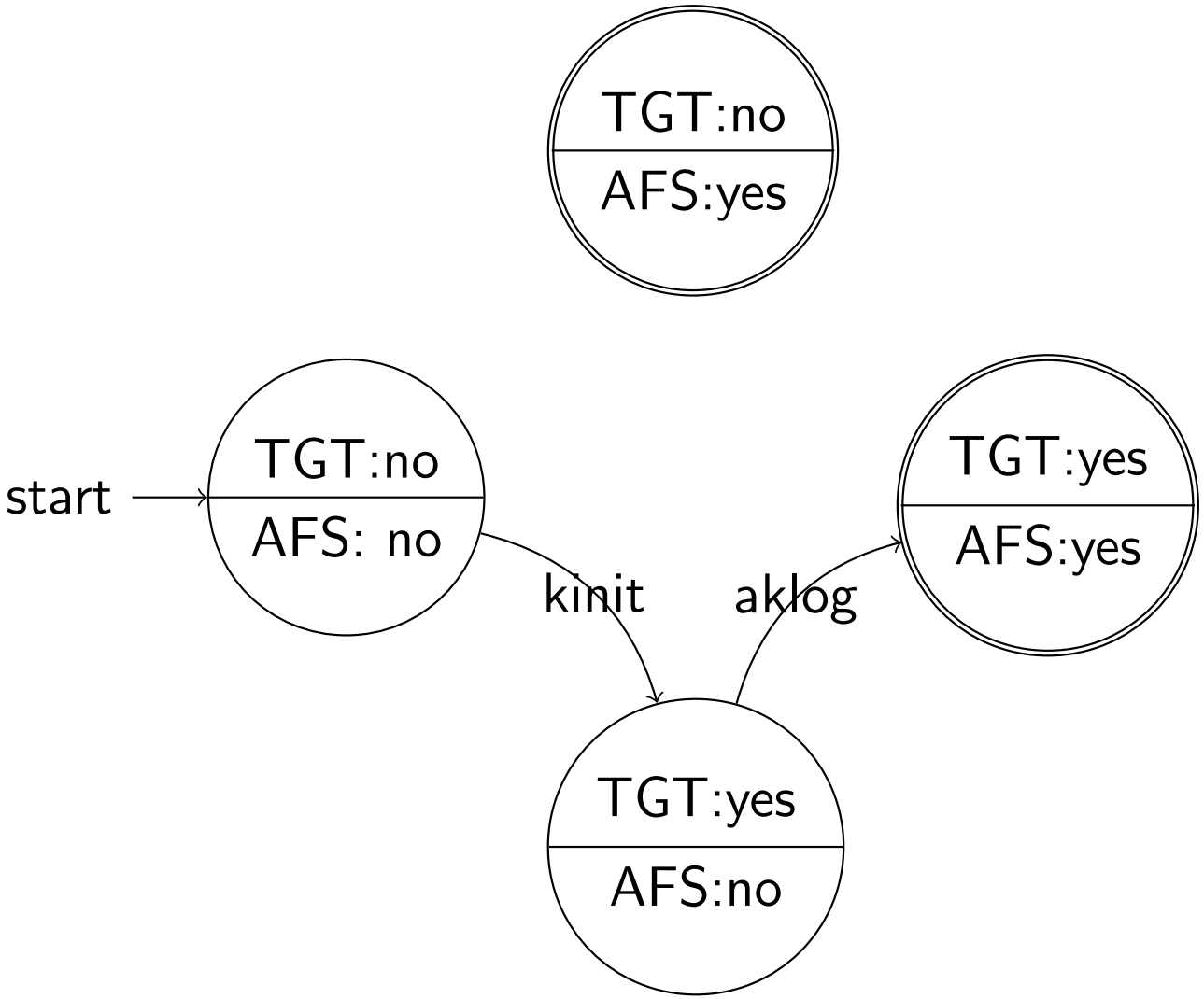

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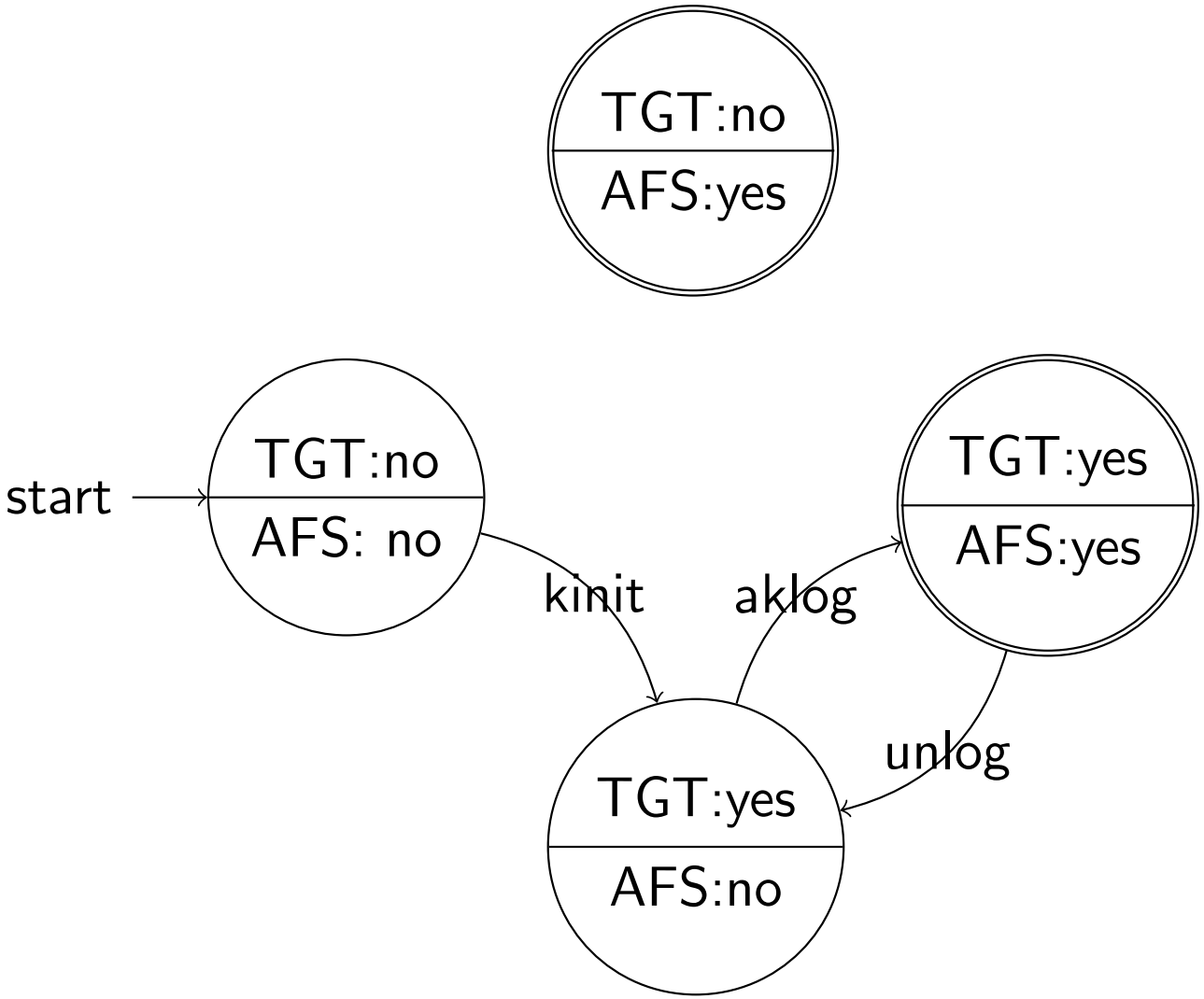

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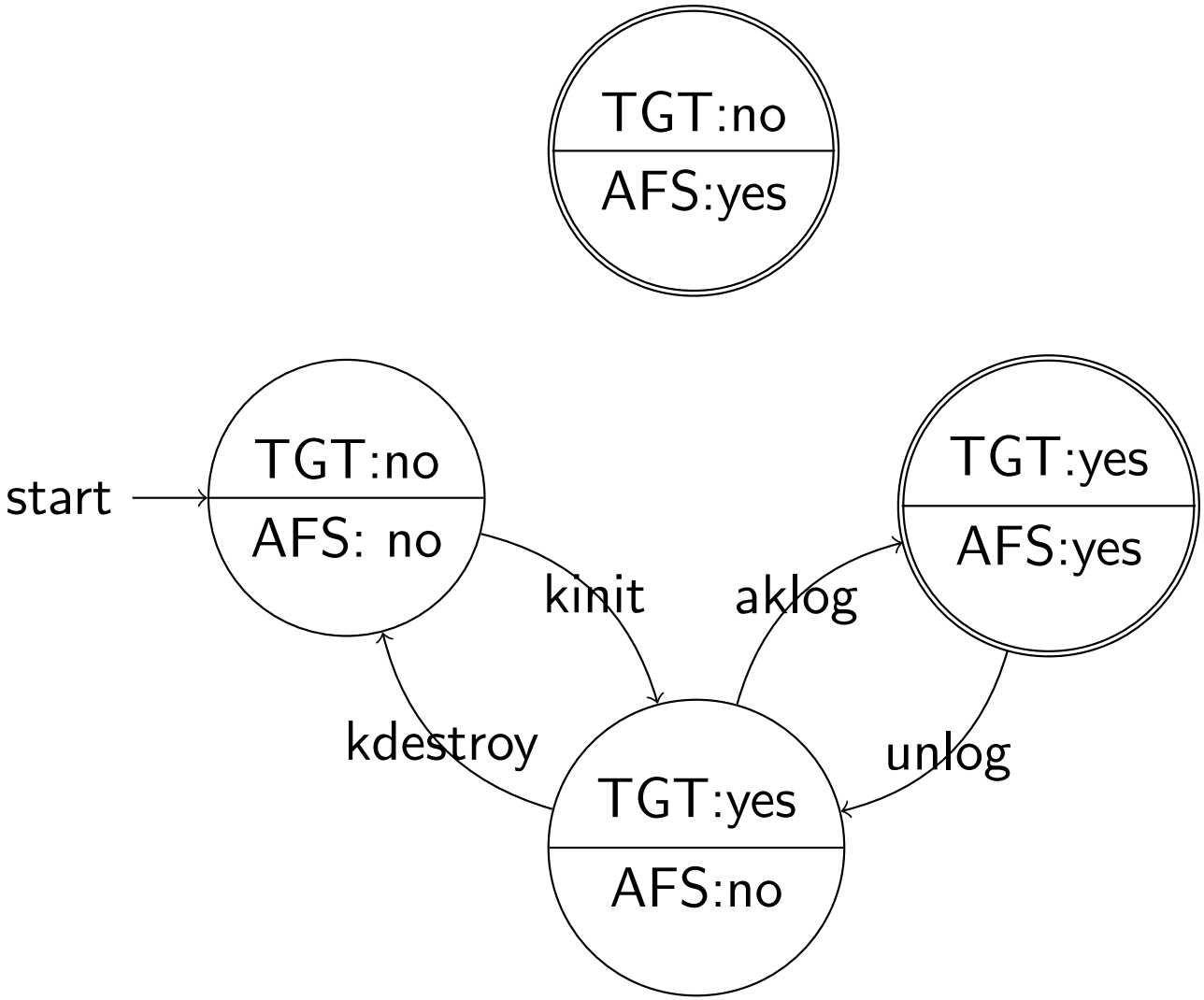
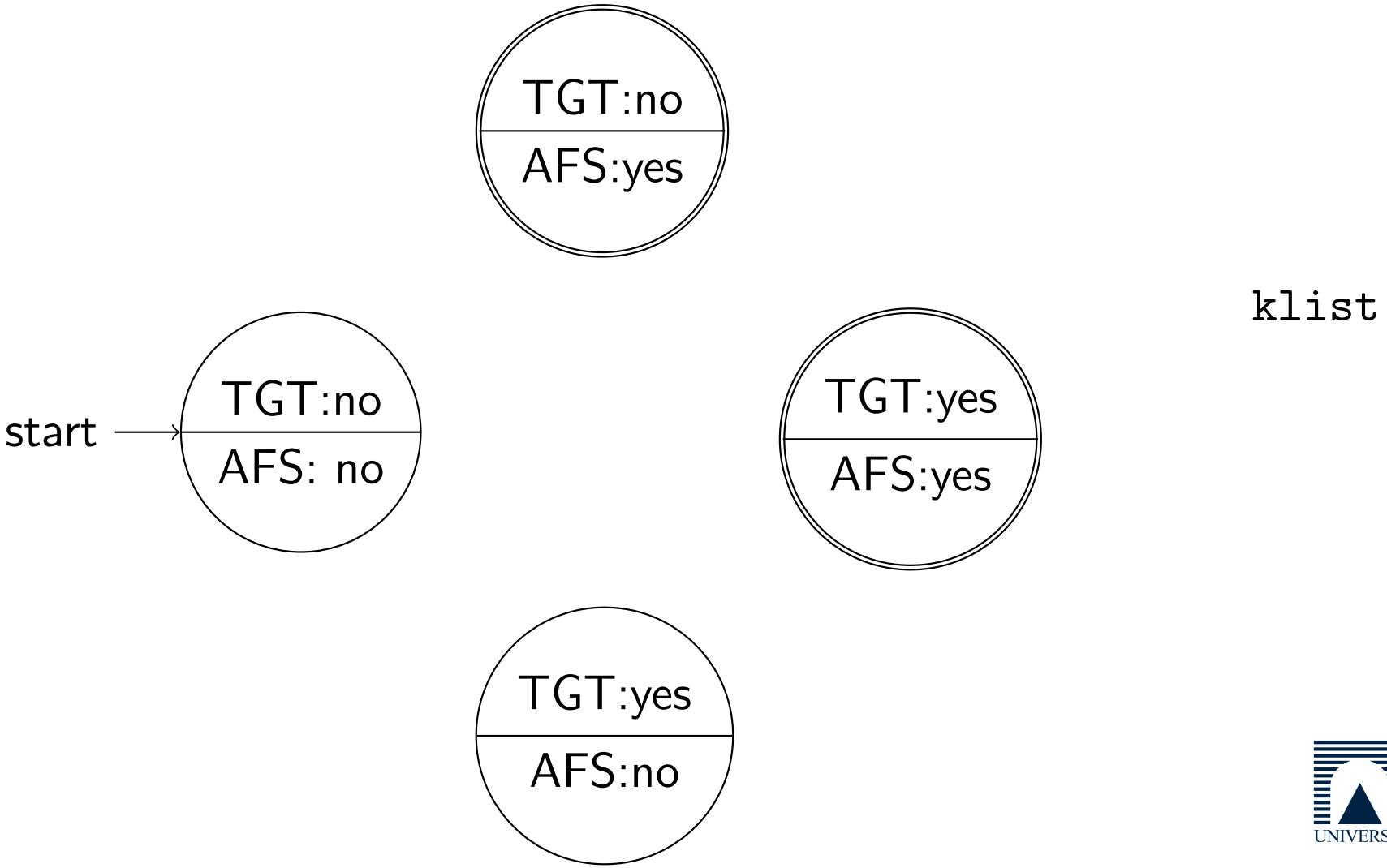


Authentication process

usually just one Kerberos ticket;



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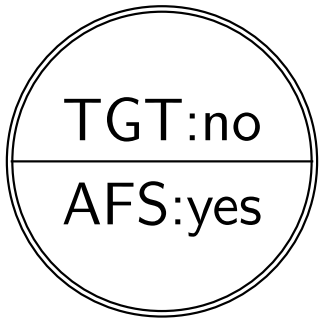
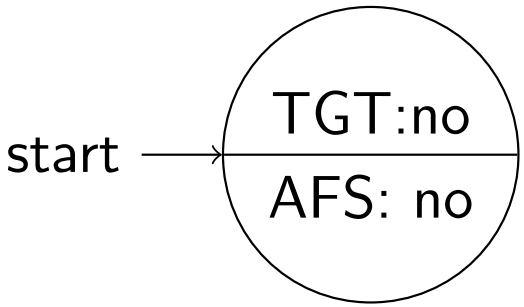


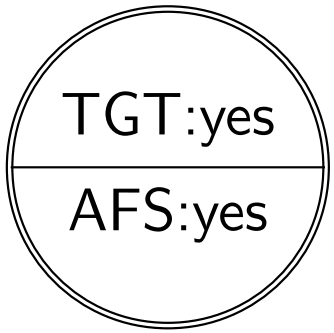
but tokens for different cells

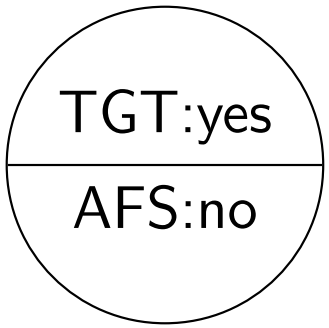
are quite common

`klist`

`tokens`







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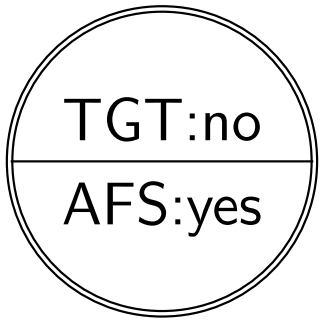

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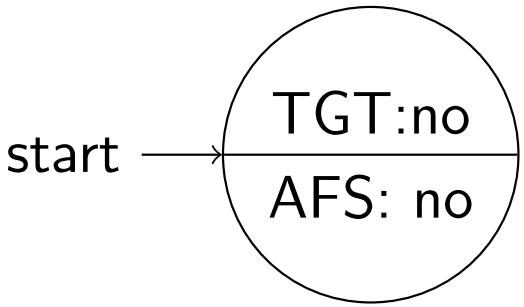

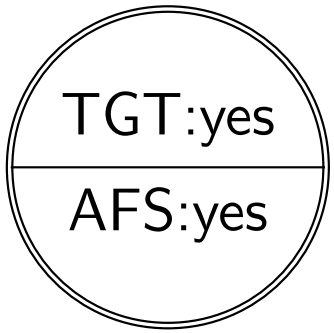

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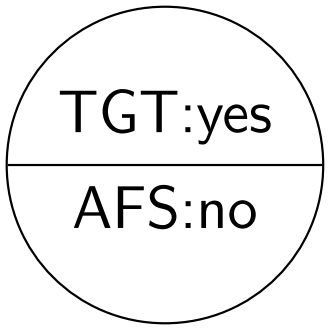

PAG or keyring

to store credentials

Developments

Kerberos kaserver $\rightsquigarrow$ Kerberos 4 $\rightsquigarrow$ Kerberos 5

- LDAP backend
- pkinit (e.g. grid context)

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- configuration inside the directory
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OpenAFS UDP $\rightsquigarrow$ TCP, IPv6 ?

- AFS3 protocol design
- Rx extensions

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How to leverage AFS

Mail mbox vs. Maildir

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How to leverage AFS

Mail	mbox vs. Maildir
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1. service restart or automatic token renewal
2. single identity or user identity
3. redundancy possible

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Further uses

Kerberos

- cross-realm authentication
- modauthkerb $\rightsquigarrow$ webauth $\rightsquigarrow$ Shibboleth
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OpenLDAP
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OpenAFS
- central configuration files
- files for daemons e.g. TFTP
- centralized backup

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Things to be aware for the moment

1. directory limitations
2. only per-directory ACLs
3. only RO volume replication
4. still DES encryption
5. one single `KeyFile`
6. no POSIX semantics
7. no byte-range locks
8. no Unicode support
9. no fine-grained administrative rights
10. device, pipe, socket not available

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Good practices

1. DNS domain name = afs cell name = Kerberos REALM name
2. Unix uid = Pts id through naming service
3. project group owned by project admin group
4. IP account has to be in a group for ACLs
5. firewall has to accept late arriving call backs
6. attention to MTU value in the network
7. use of @sys in a path which expands to client architecture
8. RO replication of seldom changing data
9. long batch jobs have to take care of credentials
10. PAM supported login acquires automatically credentials

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Difference to UNIX permissions

	UNIX permissions for a file
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- root not special !
- negative rights ?
- owner from token

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Attention everyone can use these commands

- over the net
- without authentication

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Local choices on servers and clients

OS

- AIX
- HP/UX
- Irix
- Linux
- Solaris

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- AIX
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- HP/UX
- Irix
- Linux
- Mac OS X
- Solaris
- Windows

cache type
- UFS for Solaris
- ext3 for Linux
- in memory

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Other distributed file systems

NFSv4 client can mount a server export everywhere

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Windows Dfs file replication service in a domain

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Presentations

- Windows notebook
- streaming and projector integration
- WiFi and network connectivity
- Acrobat Reader, MS Office, OpenOffice
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Presentations

- Windows notebook
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- OpenAFS client
- putty for ssh session

- send your material to the conference e-mail
- have site reports ready
- Wednesday 15 min slots

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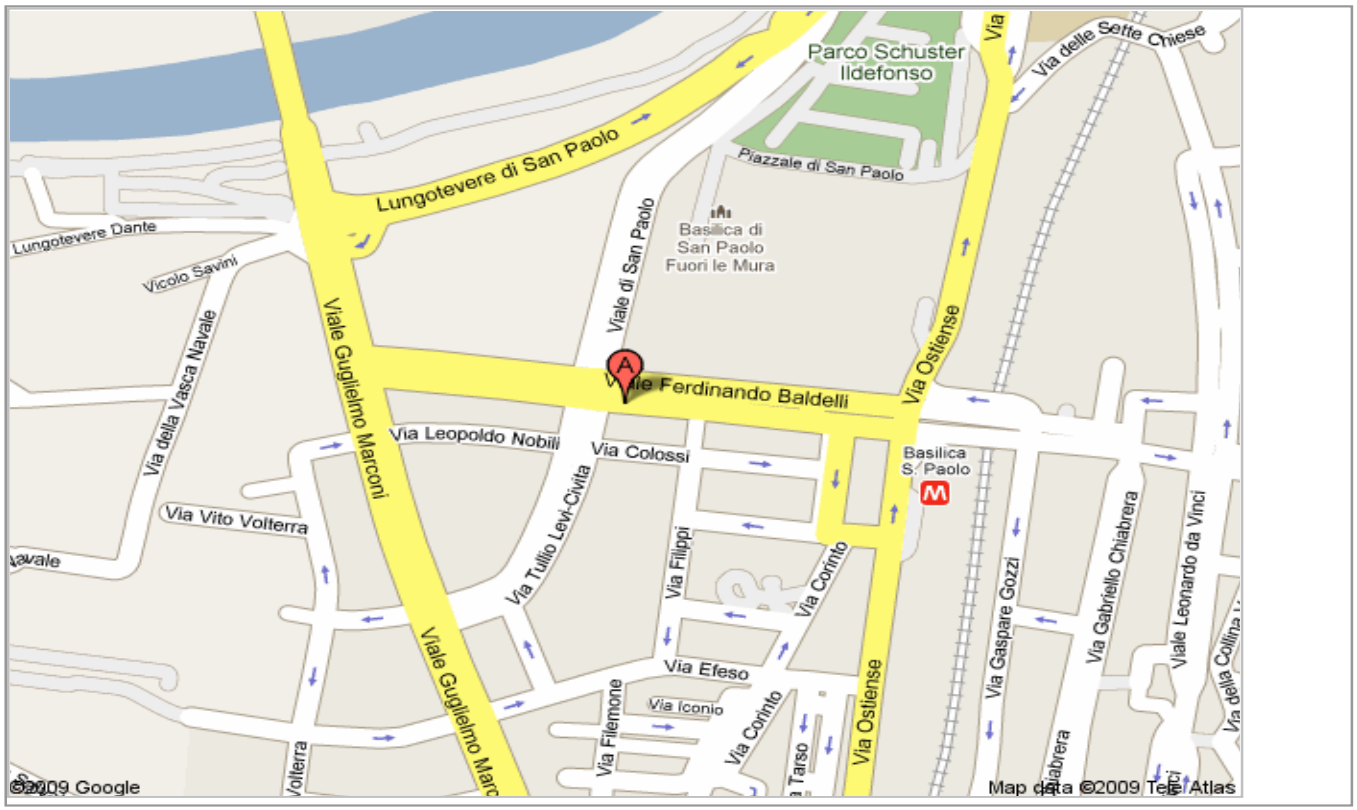
Lunch

Pensionato San Paolo, 00146 Roma - Google Maps http://maps.google.com/maps?f=q&source=s_q&hl...

Google maps **Pensionato San Paolo,** near **00146 Rome, Italy**

Notes : Location for lunch.

A. **Pensionato San Paolo**
Viale Ferdinando Baldelli, 41, 00146
Roma, Roma (Lazio), Italy - 06 54224867
23 reviews



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Social events

bus tour September, 28

- 18:00
- Via Volterra 3
- sponsored

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visit S. Paolo September, 29

- 17:30
- Basilica San Paolo
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Please, have some *cash* with you.

My cell phone: +39 329 0552317

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Dinner September, 28, 20:30

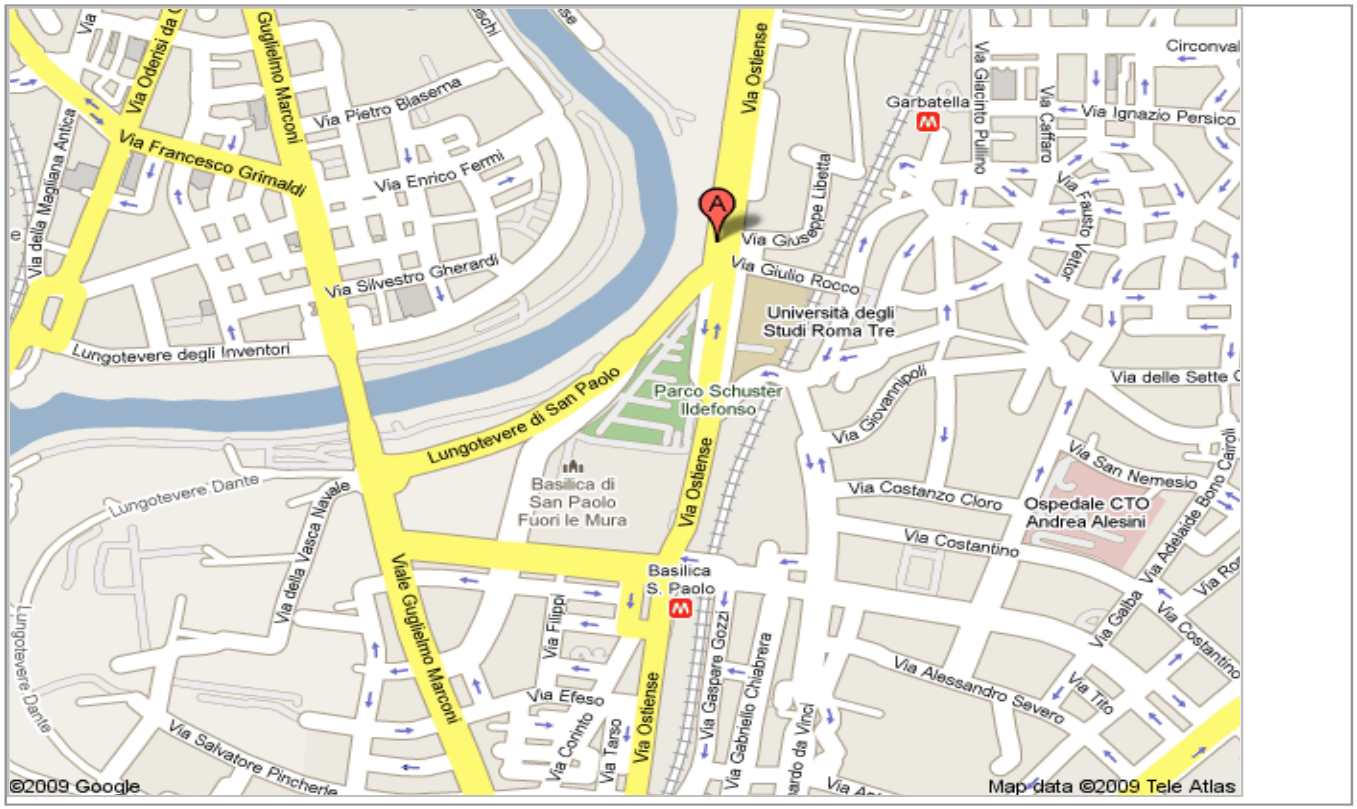
Pizzeria Biondo Tevere, 00145 Roma, Italy - Google... http://maps.google.com/maps?f=q&source=s_q&hl...

Google maps **Pizzeria Biondo Tevere,** near **00145 Rome, Italy**

Notes : free choice including Pizza.

A. Ristorante Al **Biondo Tevere**
Ristorante - **Pizzeria**
178, Via Ostiense, Roma, RM 00154,
00146, Italy - 06 5741172

Business listings provided by PagineGialle.it



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Dinner September, 29, 20:00

Trattoria dell'Omo Snc, 00146 Roma, Italy - Google... http://maps.google.com/maps?f=q&source=s_q&hl...

Google maps **Trattoria dell'Omo Snc,** near **00146 Rome, Italy**

Notes :menu ca. 25 Euro + drinks.

A. **Trattoria Dell'Omo** Di A.**Dell'Omo Snc**
Viale Guglielmo Marconi, 475, 00146
Roma, Rom (Lazio), Italy - 06 5593715
1 review

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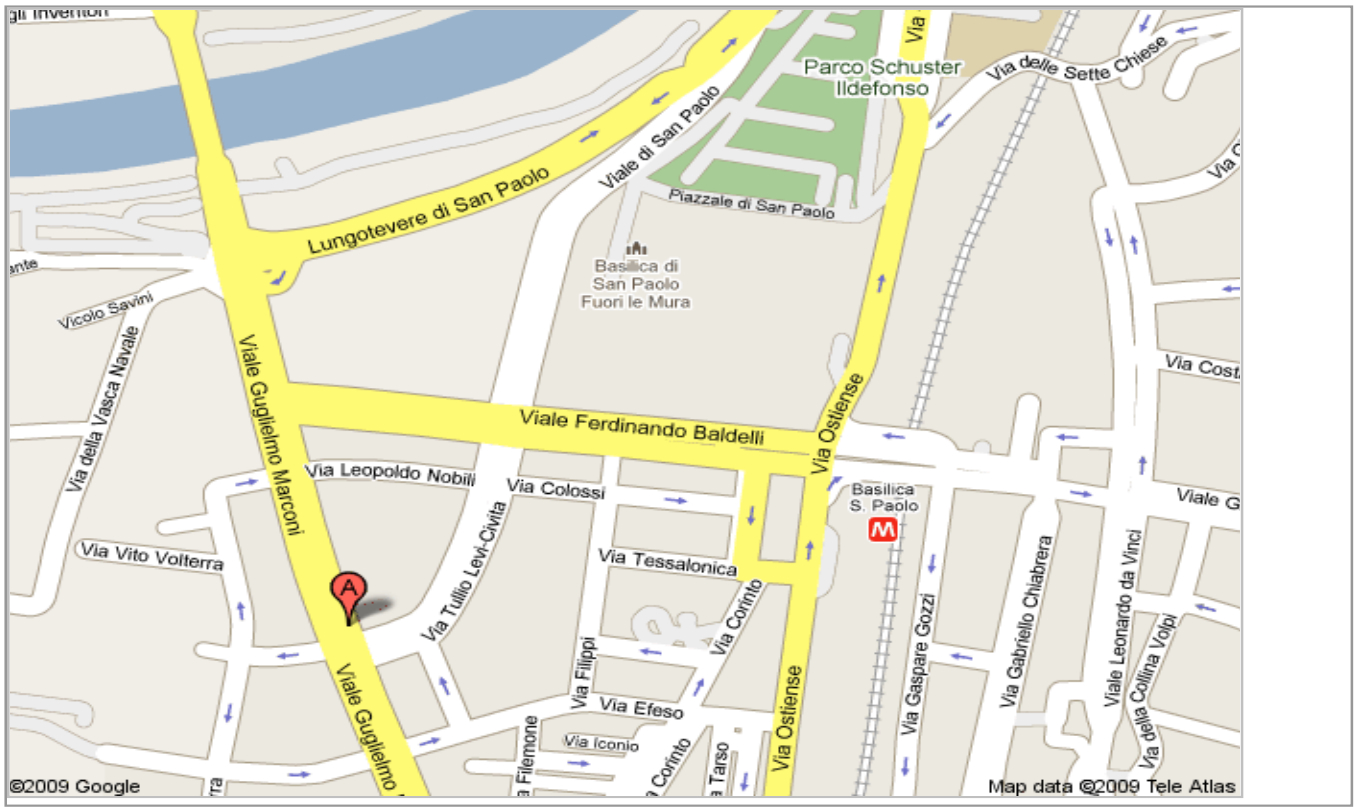

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