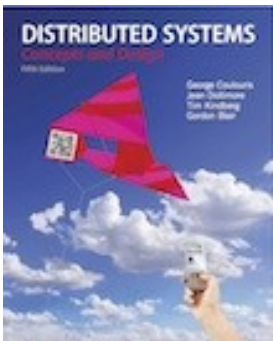


Slides for Chapter 13: Name Services



From **Coulouris, Dollimore, Kindberg and Blair**

**Distributed Systems:
Concepts and Design**

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Figure 13.1

Composed naming domains used to access a resource from a URL

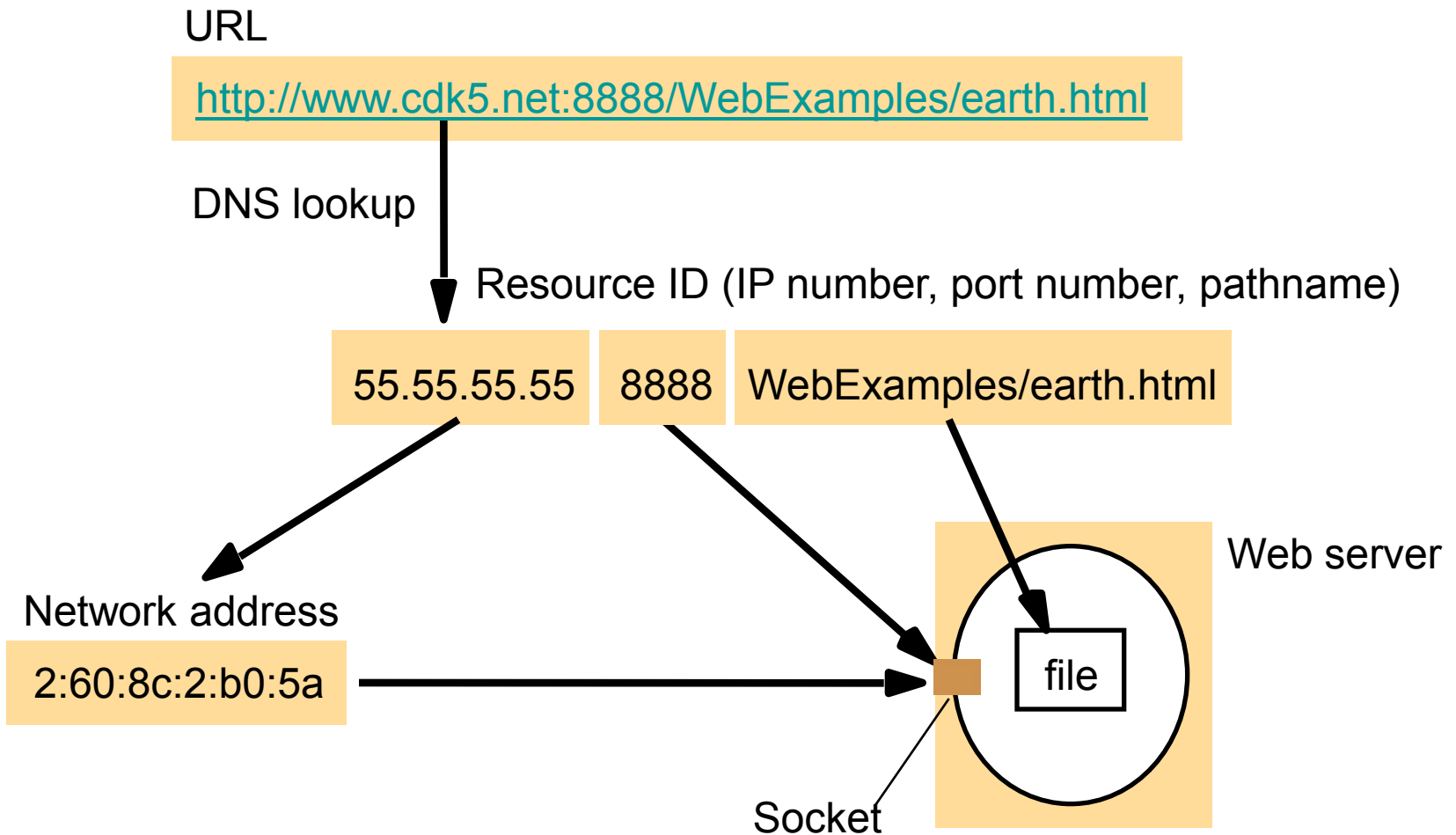
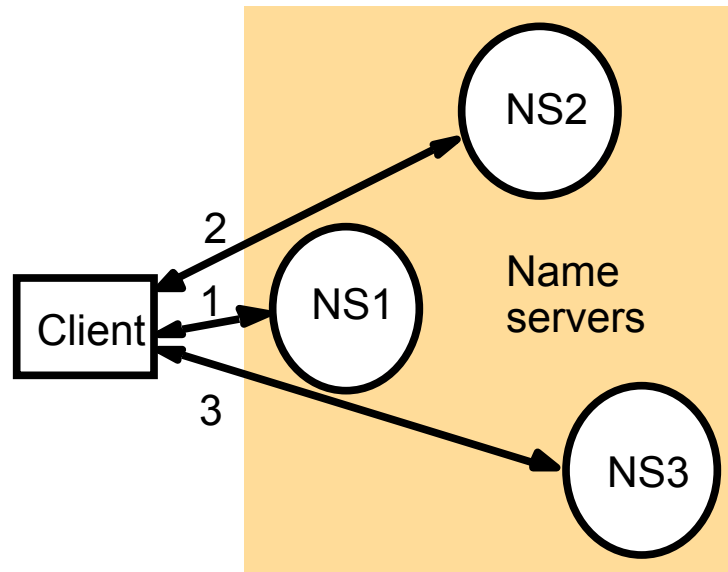
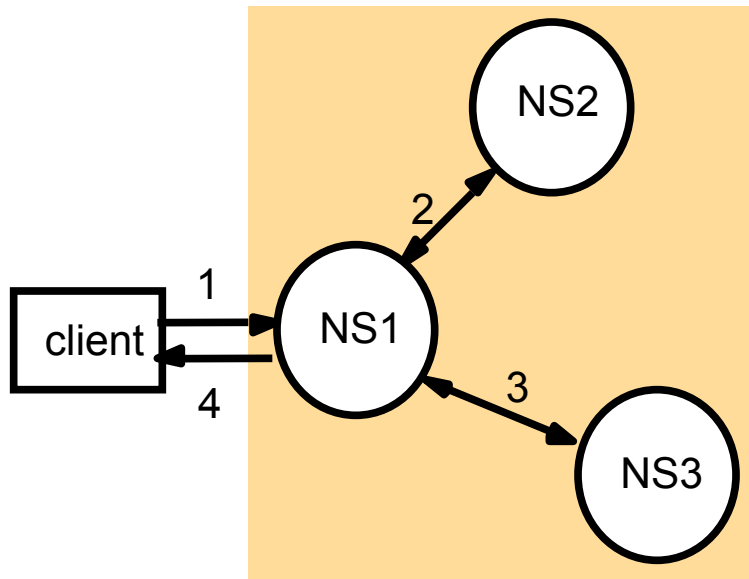


Figure 13.2 Iterative navigation

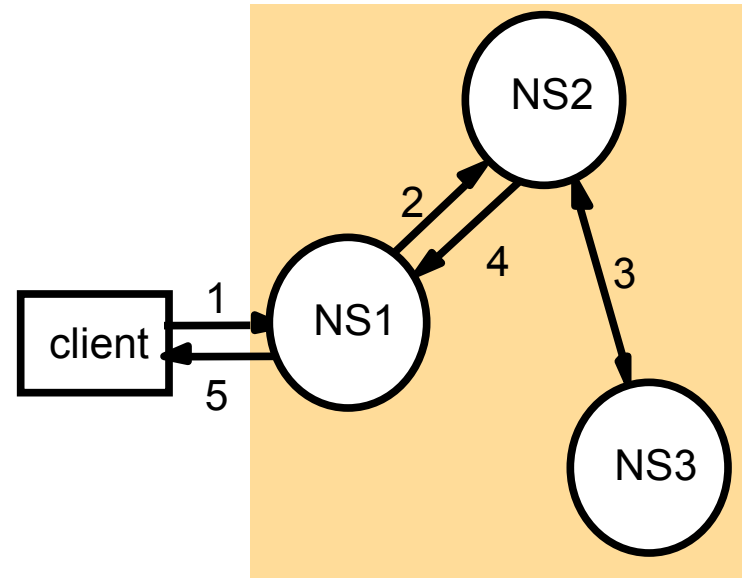


A client iteratively contacts name servers NS1–NS3 in order to resolve a name

Figure 13.3 Non-recursive and recursive server-controlled navigation



Non-recursive
server-controlled



Recursive
server-controlled

A name server NS1 communicates with other name servers on behalf of a client

Figure 13.4

DNS name servers

Note: Name server names are in italics, and the corresponding domains are in parentheses.

Arrows denote name server entries

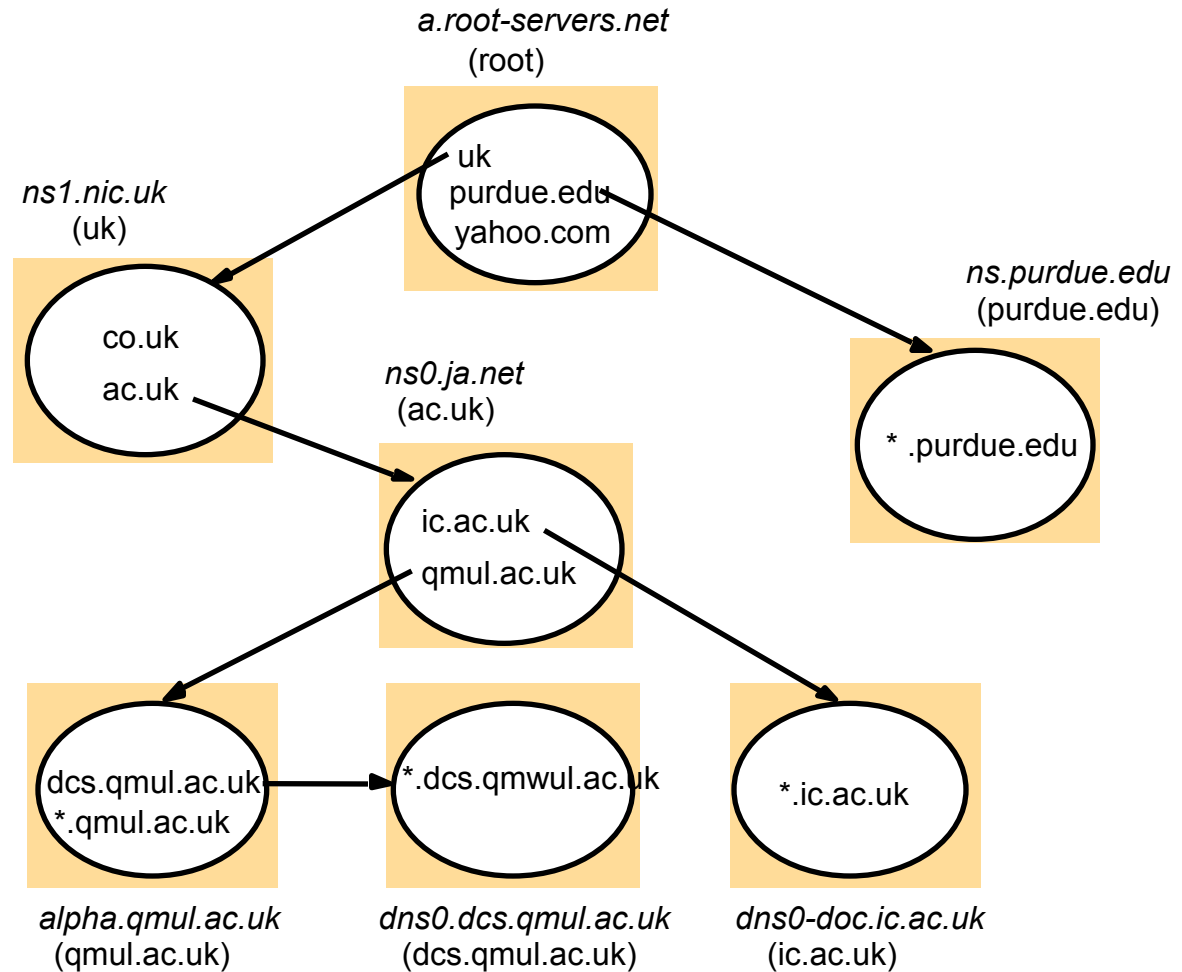


Figure 13.5

DNS resource records

<i>Record type</i>	<i>Meaning</i>	<i>Main contents</i>
A	A computer address	IP number
NS	An authoritative name server	Domain name for server
CNAME	The canonical name for an alias	Domain name for alias
SOA	Marks the start of data for a zone	Parameters governing the zone
WKS	A well-known service description	List of service names and protocols
PTR	Domain name pointer (reverse lookups)	Domain name
HINFO	Host information	Machine architecture and operating system
MX	Mail exchange	List of <i><preference, host></i> pairs
TXT	Text string	Arbitrary text

Figure 13.6
DNS zone data records

<i>domain name</i>	<i>time to live</i>	<i>class</i>	<i>type</i>	<i>value</i>
<i>dcs.qmul.ac.uk</i>	<i>1D</i>	<i>IN</i>	<i>NS</i>	<i>dns0</i>
<i>dcs.qmul.ac.uk</i>	<i>1D</i>	<i>IN</i>	<i>NS</i>	<i>dns1</i>
<i>dcs.qmul.ac.uk</i>	<i>1D</i>	<i>IN</i>	<i>NS</i>	<i>cancer.ucs.ed.ac.uk</i>
<i>dcs.qmul.ac.uk</i>	<i>1D</i>	<i>IN</i>	<i>MX</i>	<i>1 mail1.qmul.ac.uk</i>
<i>dcs.qmul.ac.uk</i>	<i>1D</i>	<i>IN</i>	<i>MX</i>	<i>2 mail2.qmul.ac.uk</i>

<i>domain name</i>	<i>time to live</i>	<i>class</i>	<i>type</i>	<i>value</i>
<i>www</i>	<i>1D</i>	<i>IN</i>	<i>CNAME</i>	<i>apricot</i>
<i>apricot</i>	<i>1D</i>	<i>IN</i>	<i>A</i>	<i>138.37.88.248</i>

<i>dcs</i>	<i>1D</i>	<i>IN</i>	<i>NS</i>	<i>dns0.dcs</i>
<i>dns0.dcs</i>	<i>1D</i>	<i>IN</i>	<i>A</i>	<i>138.37.88.249</i>
<i>dcs</i>	<i>1D</i>	<i>IN</i>	<i>NS</i>	<i>dns1.dcs</i>
<i>dns1.dcs</i>	<i>1D</i>	<i>IN</i>	<i>A</i>	<i>138.37.94.248</i>

Figure 13.7
GNS directory tree and value tree for user Peter.Smith

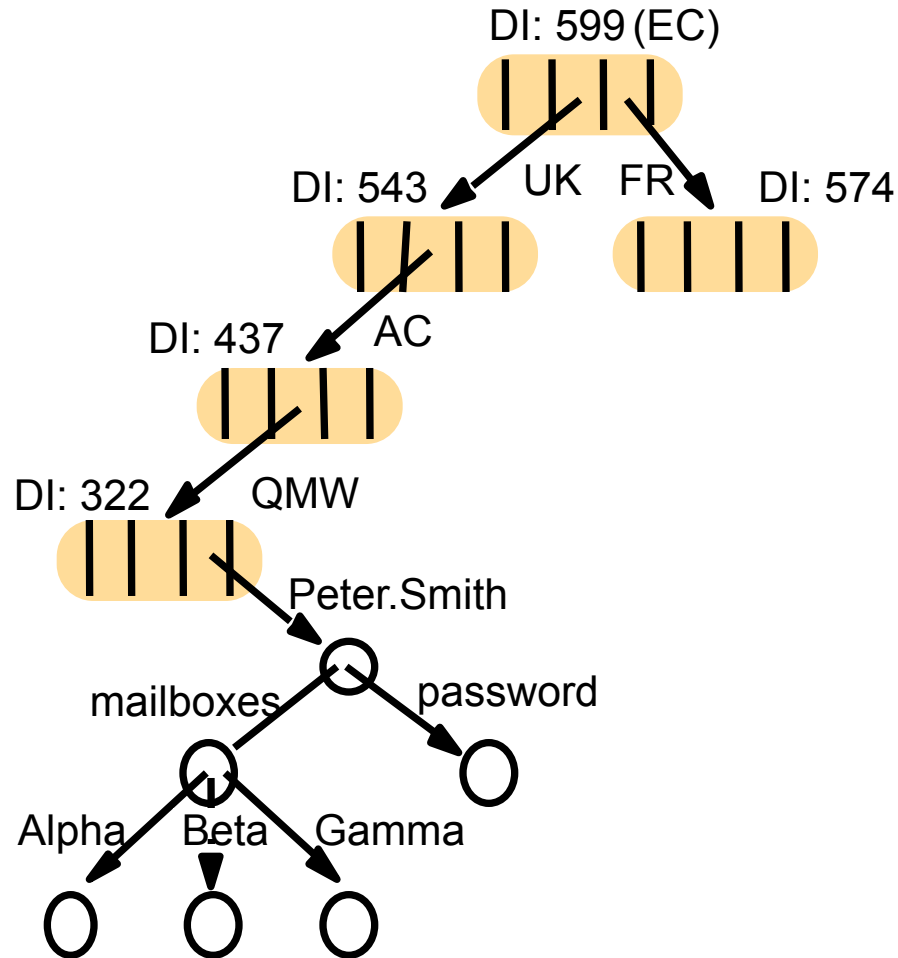


Figure 13.8
Merging trees under a new root

Well-known directories:

#599 = #633/EC
#642 = #633/NORTH AMERICA

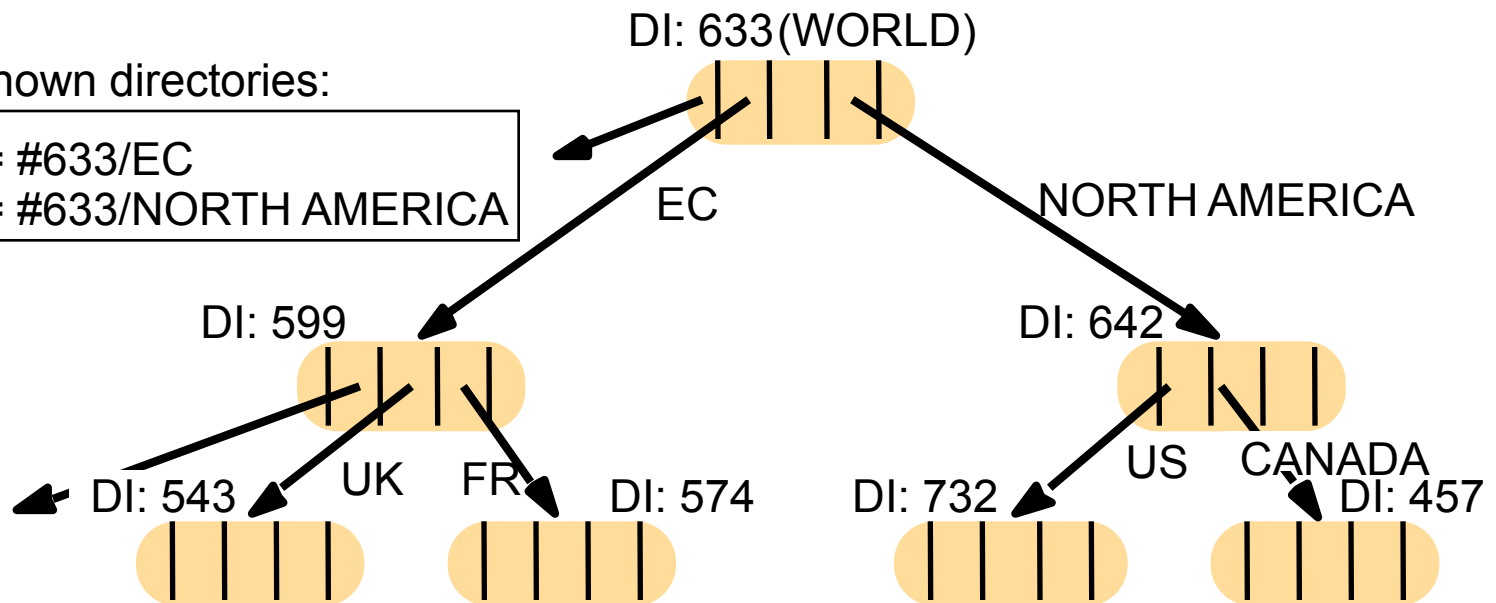


Figure 13.9 Restructuring the directory

Well-known directories:

#599 = #633/EC

#642 = #633/NORTH AMERICA

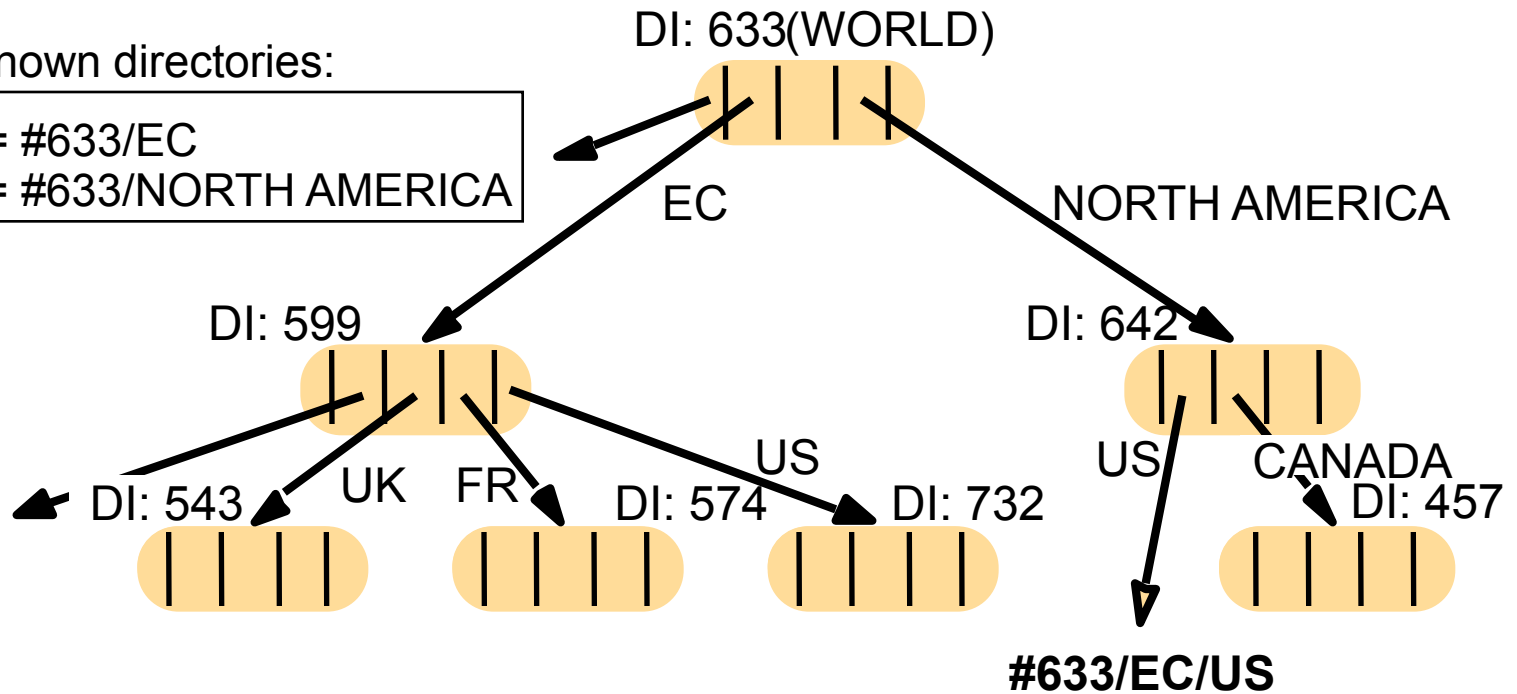


Figure 13.10
X.500 service architecture

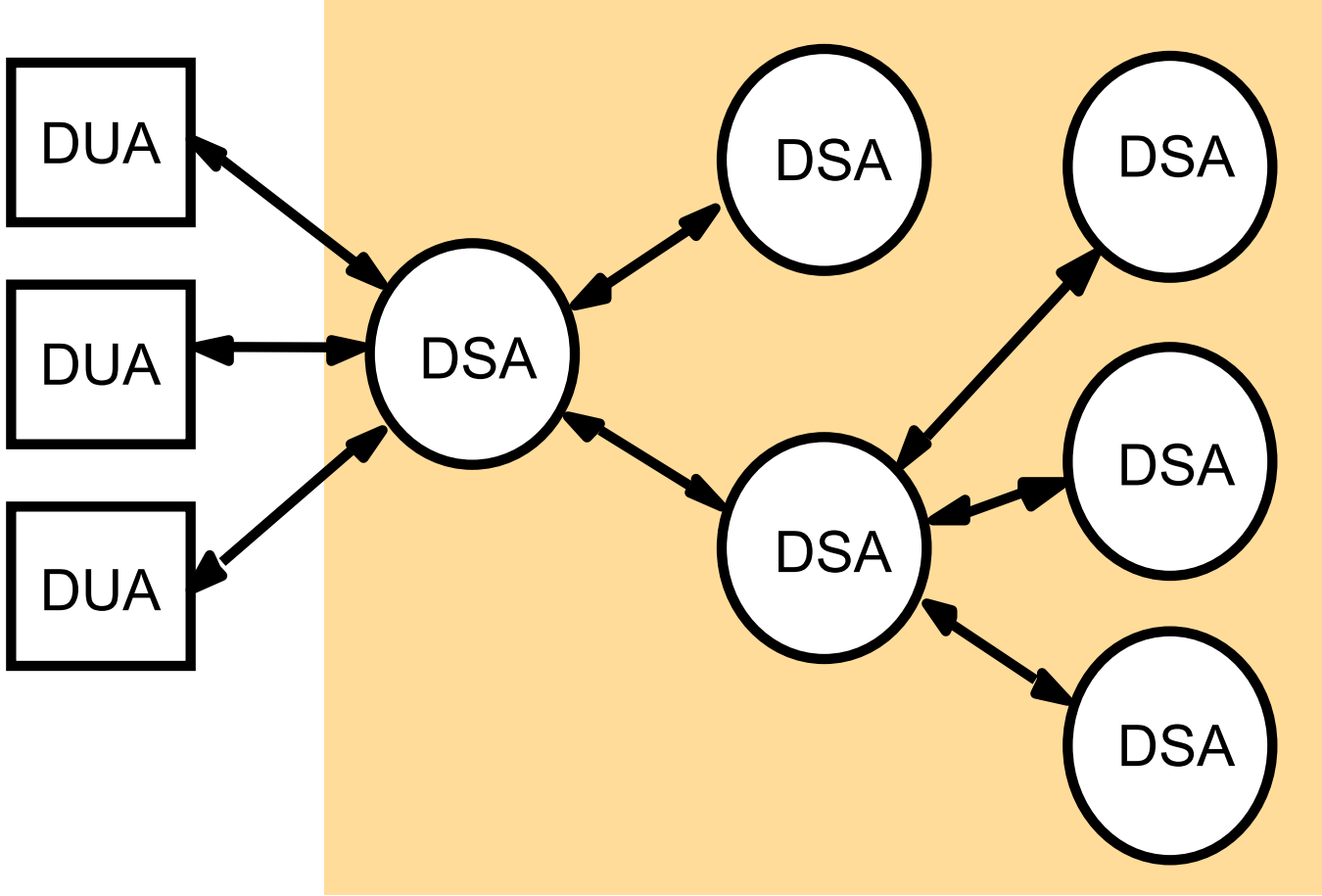


Figure 13.11
Part of the X.500 Directory Information Tree

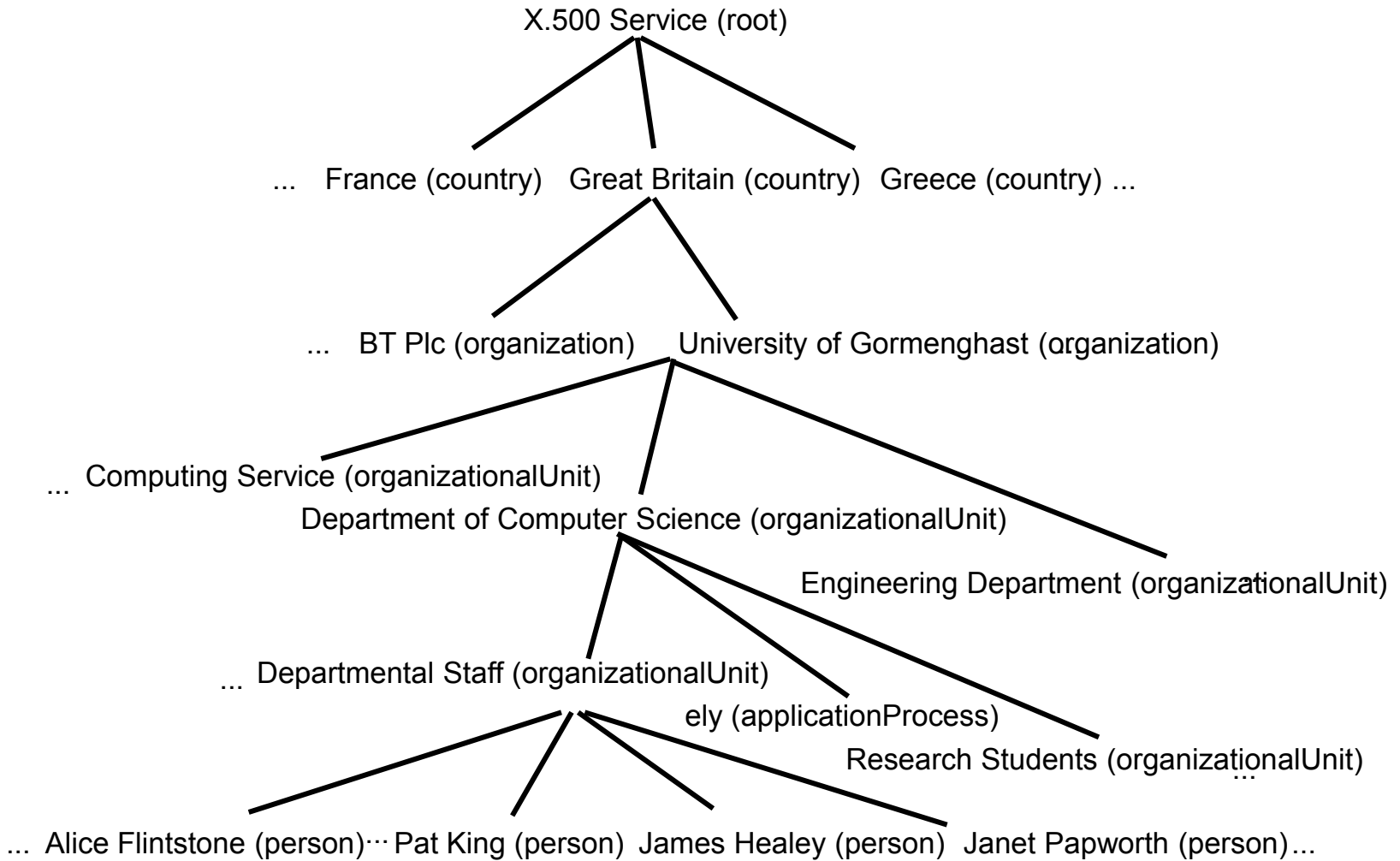


Figure 13.12 An X.500 DIB Entry

info

Alice Flintstone, Departmental Staff, Department of Computer Science,
University of Gormenghast, GB

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Alice.Flintstone
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