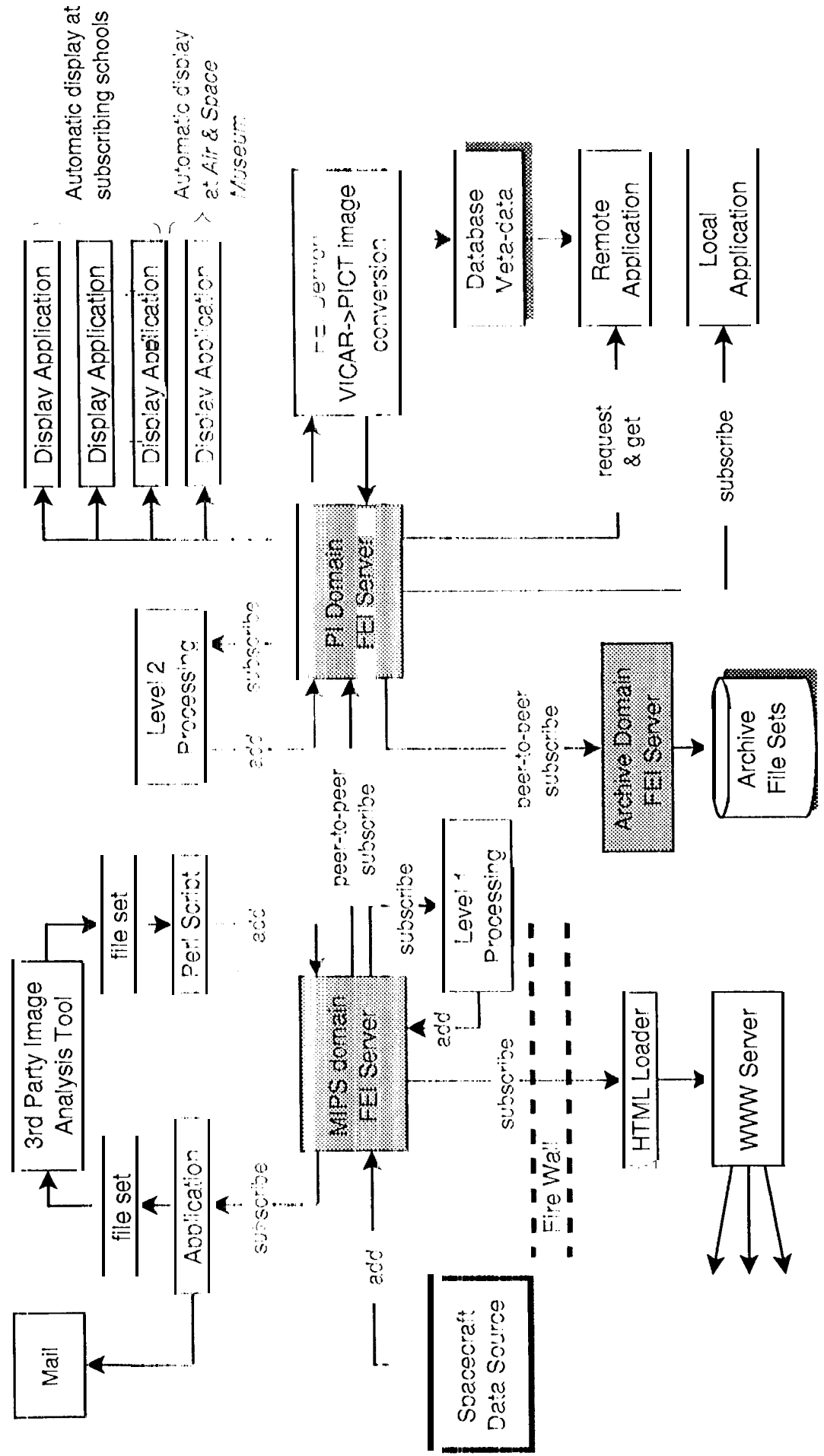# A Distributed Example
File Transfer Interface
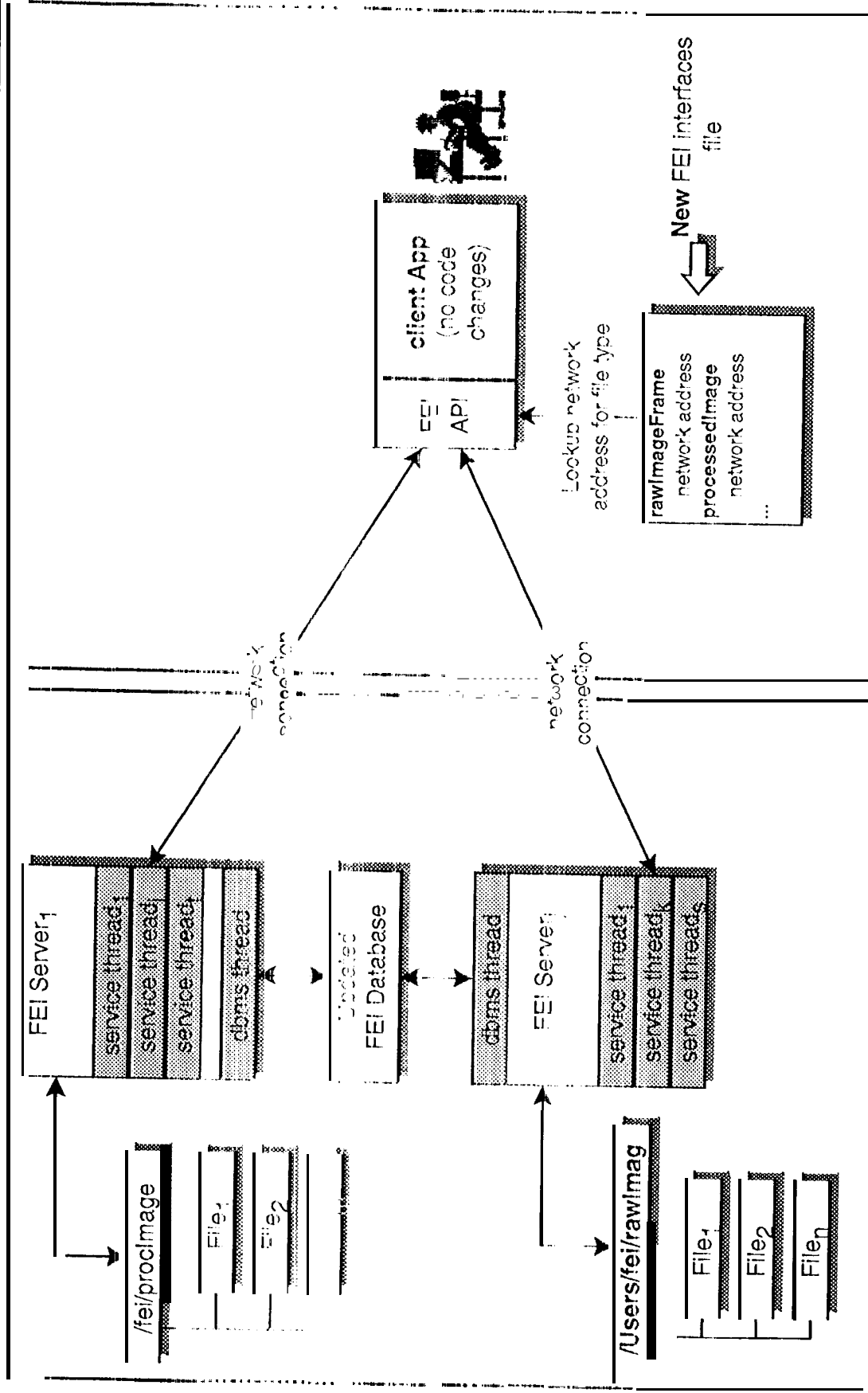
The User's Logical View Of The System

User's Logical View

— Transfer options: get (subscribe, request), add, replace, delete, rename
— Address by file type
— Add auxilary functions when necessary: CRC, encrpytion, compression

File Type
rawImageFrame

file$_1$

file$_2$

file$_n$

get
rawImageFrame/file123

add
processedImage/file64

rawImageFrame
network address
processedImage
network address
...

FEI interfaces file

File Type
processedImage

file$_1$

file$_2$

file$_m$

File Type Information is used to

— Find a network address in the interfaces file.
— Located the physical directory where a file is located.
— Check file access. Does the user have a "role" that will allow him or her to carry out the requested tranfer on this file type?
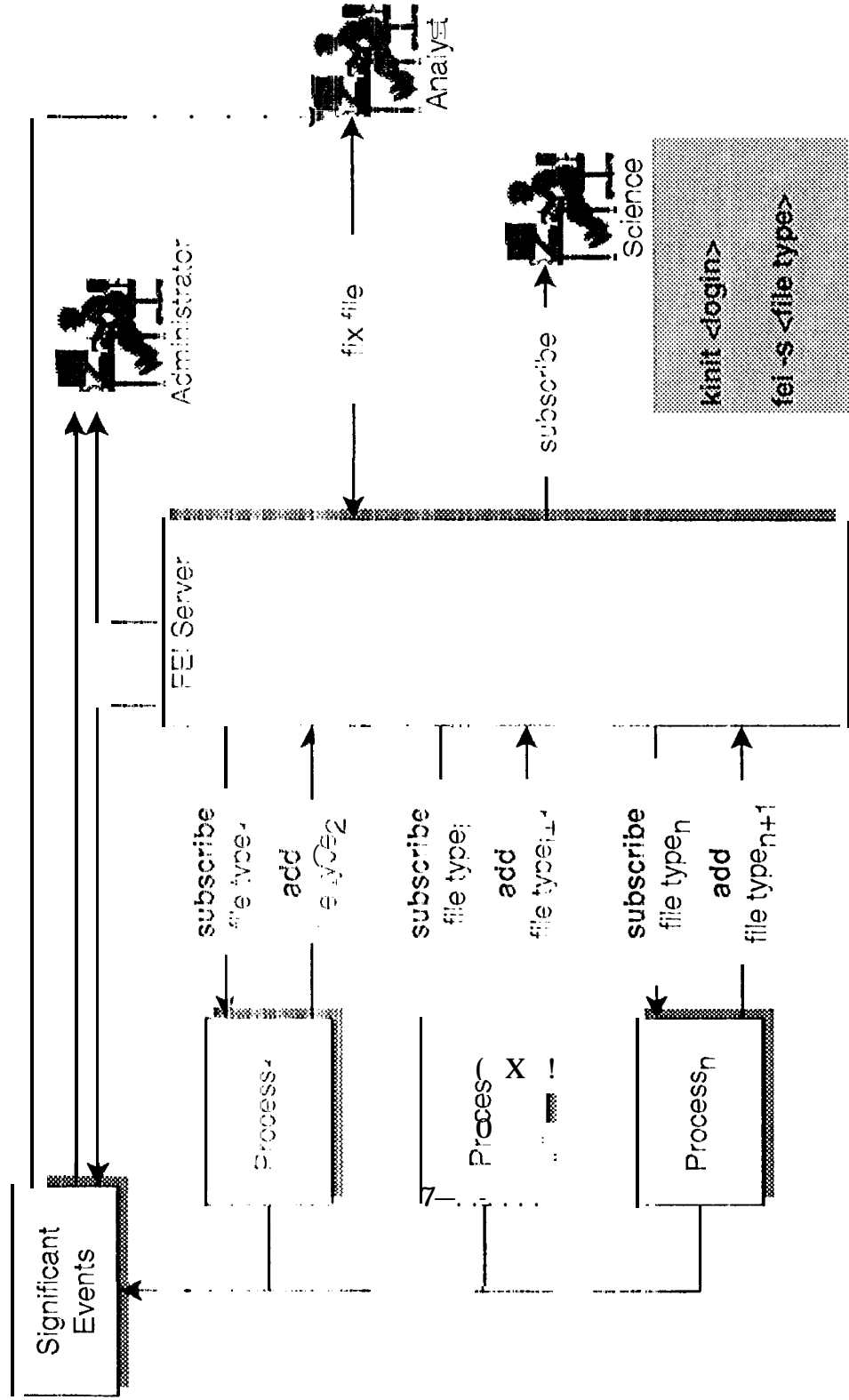
Adding Servers For Performance Or Other Reasons
Phyical configuration changes but logical view remains the same

Subscription & Automation

Analyst

Administrator

Science

kinit <login>

fei -s <file type>

fix file

subscribe

FEI Server

subscribe
file type
add
file type$_2$

subscribe
file type
add
file type

subscribe
file type$_n$
add
file type$_{n+1}$

Process

Process X !

Process$_n$

7

Significant
Events

Requests
"Subscription Lite" + Demon Processing

- **Only file type and file name information sent after Demon processing completes.**

- **Look at meta-data to determine if the file is valuable.**

- **Get the file from FEI if it is.**

- **Example: Send me only the images that depict features with n a specified atitude and longitude range.**
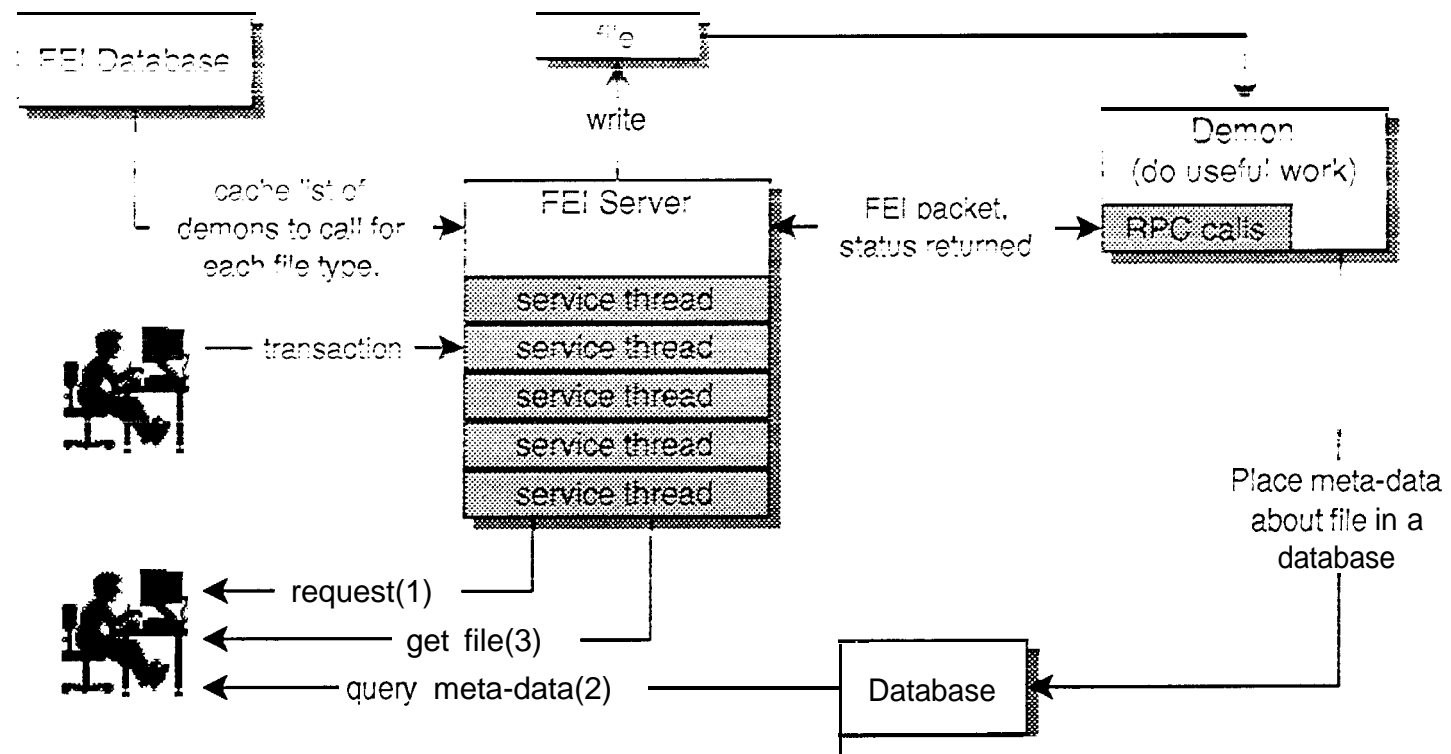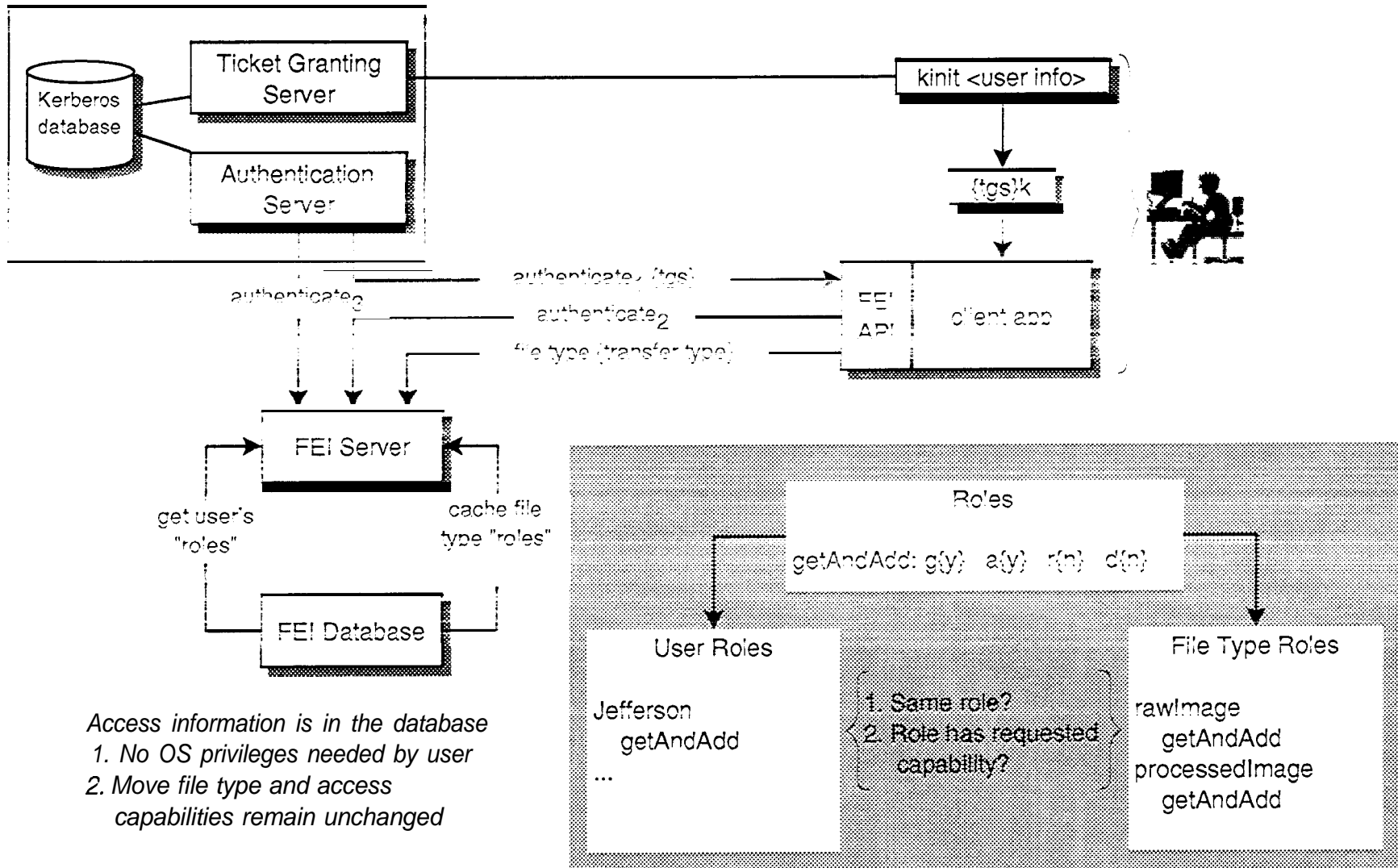
Managing A System
FEI Administration

- **All FEI configuration data is stored in a database**

- **Resource Manager—A connection that reports on status of a server.**

- **Hot Boot—Change the configuration of a server while it's running.**

- Significant Events—Error conditions and other events are written to a database table from which they can be automatically displayed to users who have issued a sigEvent registered procedure (Sybase version only).

FEI Security
Kerberos Authentication, Access by "Role"

Ticket Granting Server

Kerberos database

Authentication Server

kinit <user info>

{tgs}k

authenticate, {tgs}

authenticate₂

file type (transfer type)

FEI API

client app

FEI Server

get user's "roles"

cache file type "roles"

FEI Database

Roles

getAndAdd: g(y) a(y) r(n) d(n)

User Roles

Jefferson
    getAndAdd
...

1. Same role?
2. Role has requested capability?

File Type Roles

rawImage
    getAndAdd
processedImage
    getAndAdd

Access information is in the database
1. No OS privileges needed by user
2. Move file type and access
*   capabilities remain unchanged*