Remote Visualization of Large Multi-dimensional Radio Astronomy Data Sets

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CyberSKA

www.cyberska.org

- develop (cyber) infrastructure for SKA
- collaboration portal
- applications accessible online
- minimal software & hardware requirements for client side (browser and internet)

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the problem

server
big file

user
internet

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the problem

server
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existing solutions

- file transfer
  - not easy for ‘very’ large files
- remote X11 and VNC
- permissions & security
- resource allocations
- integration with web
- interactivity

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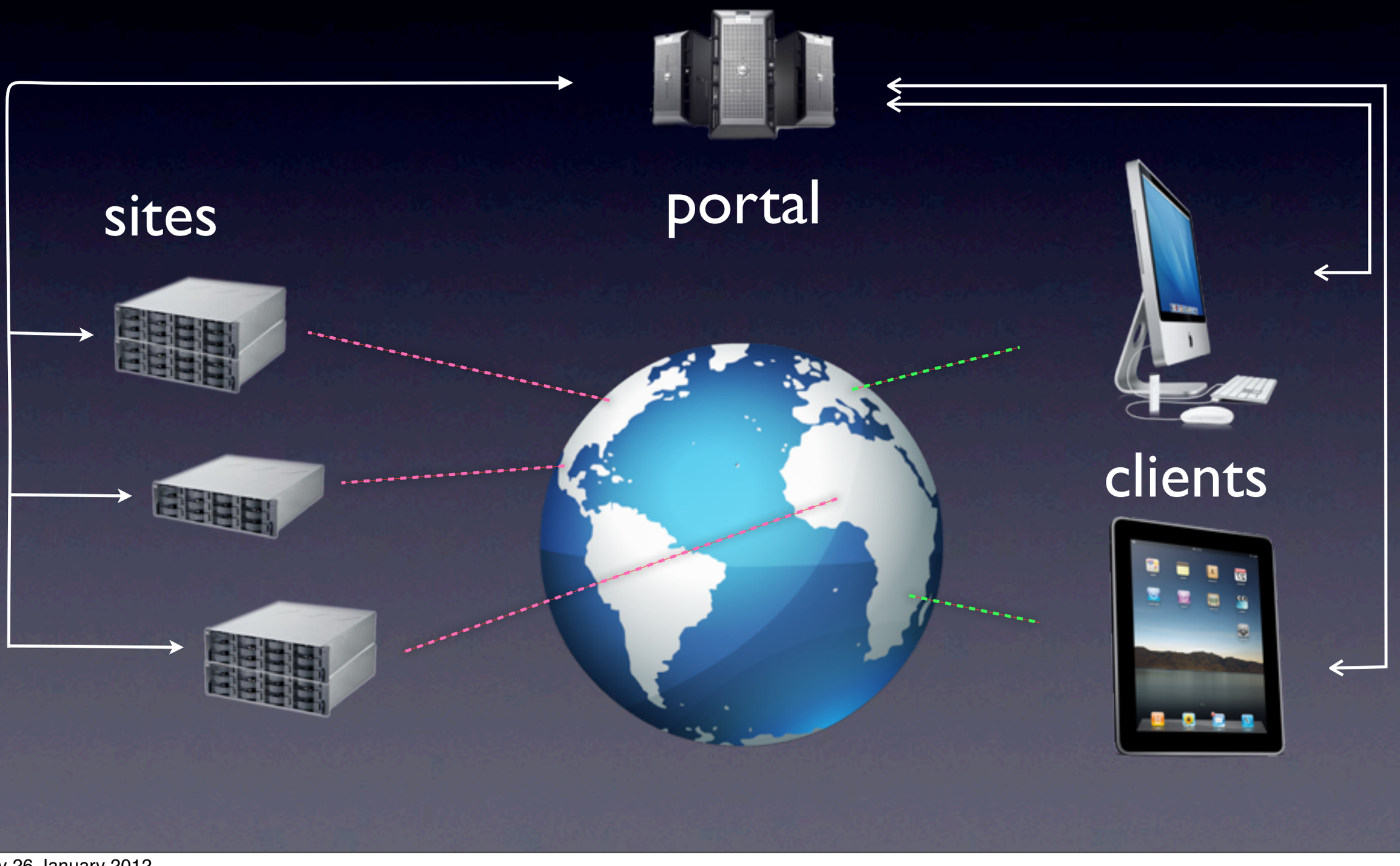
CyberSKA approach

sites

clients

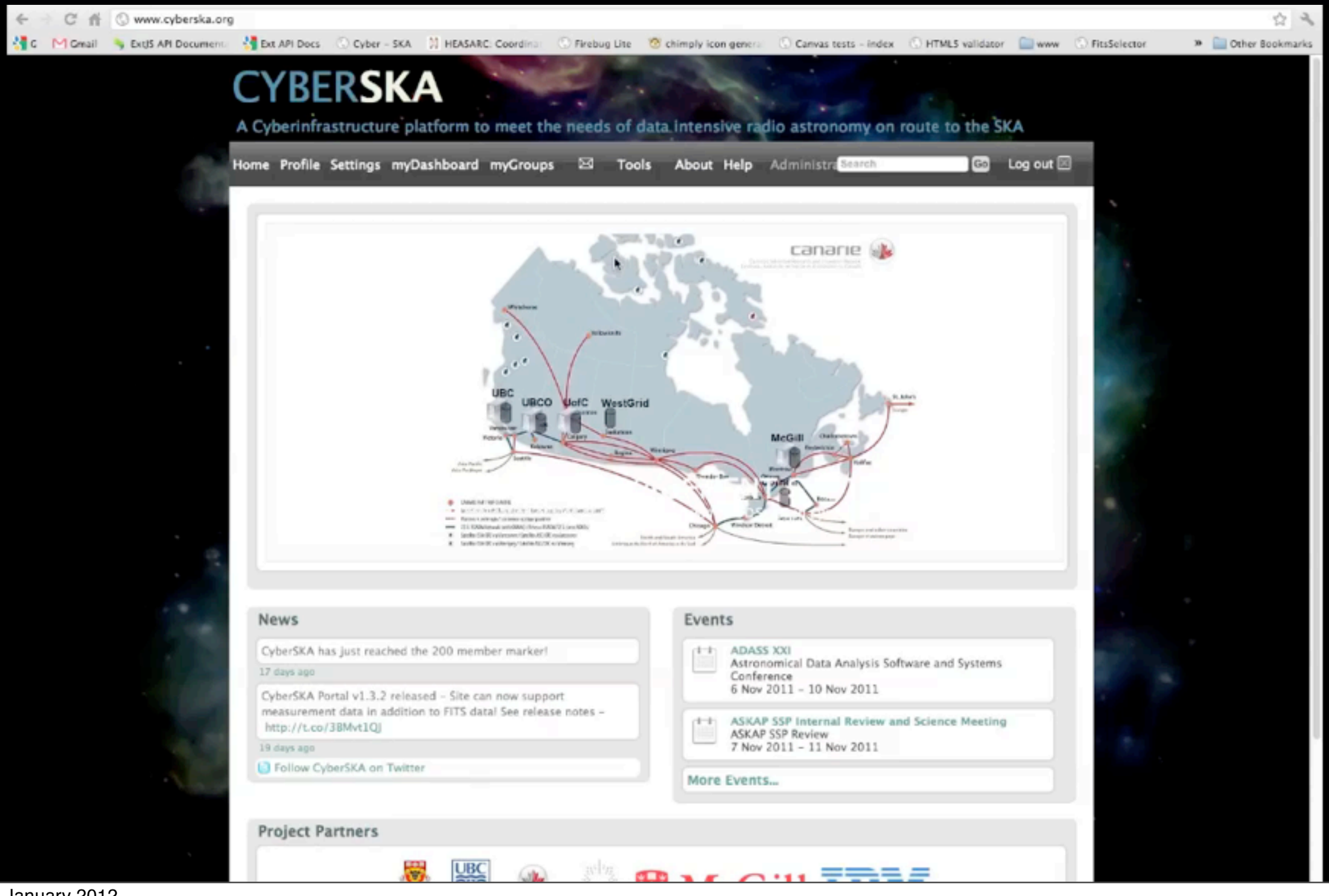
CyberSKA approach



client-side viewer

- last year ADASS
  - client-side visualization tool
  - downloads portions of FITS file
  - all processing & visualization done in browser
  - JavaScript & HTML5

client-side viewer



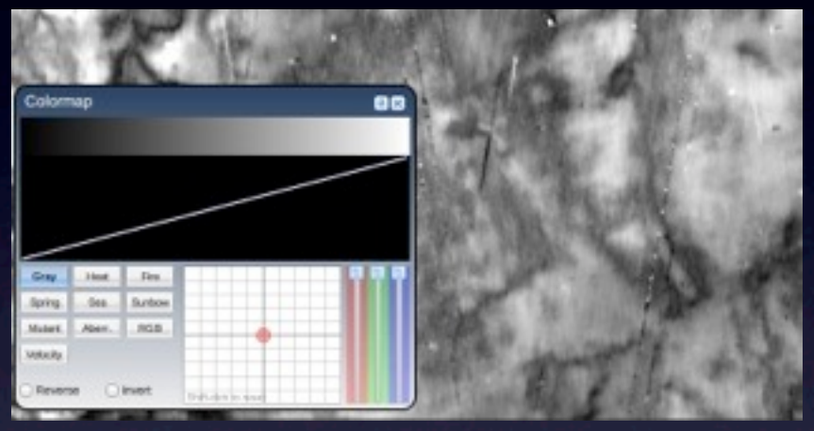
client-side viewer

- users asked for more features
- faster startup
- handle larger files
- profiles along X, Y and Z axis
- playing movies along 3rd axis

server-side visualization

- some tasks must be done server-side
- might as well do them all on server
- client handles GUI (thin client)
- server does all computation and rendering
- server “tells” client what to render

general idea



colormap = “heat”

recomputes image

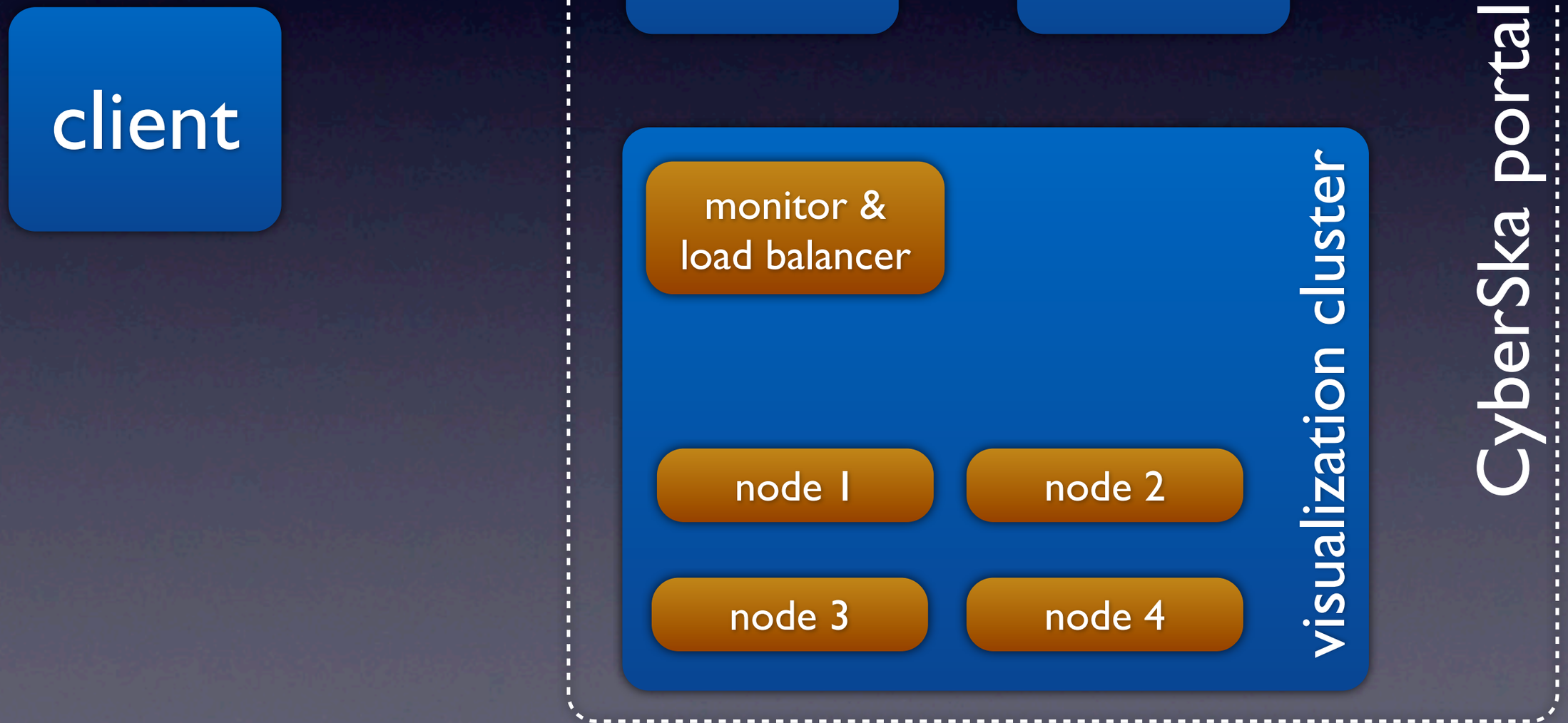
compresses to JPEG

client | server

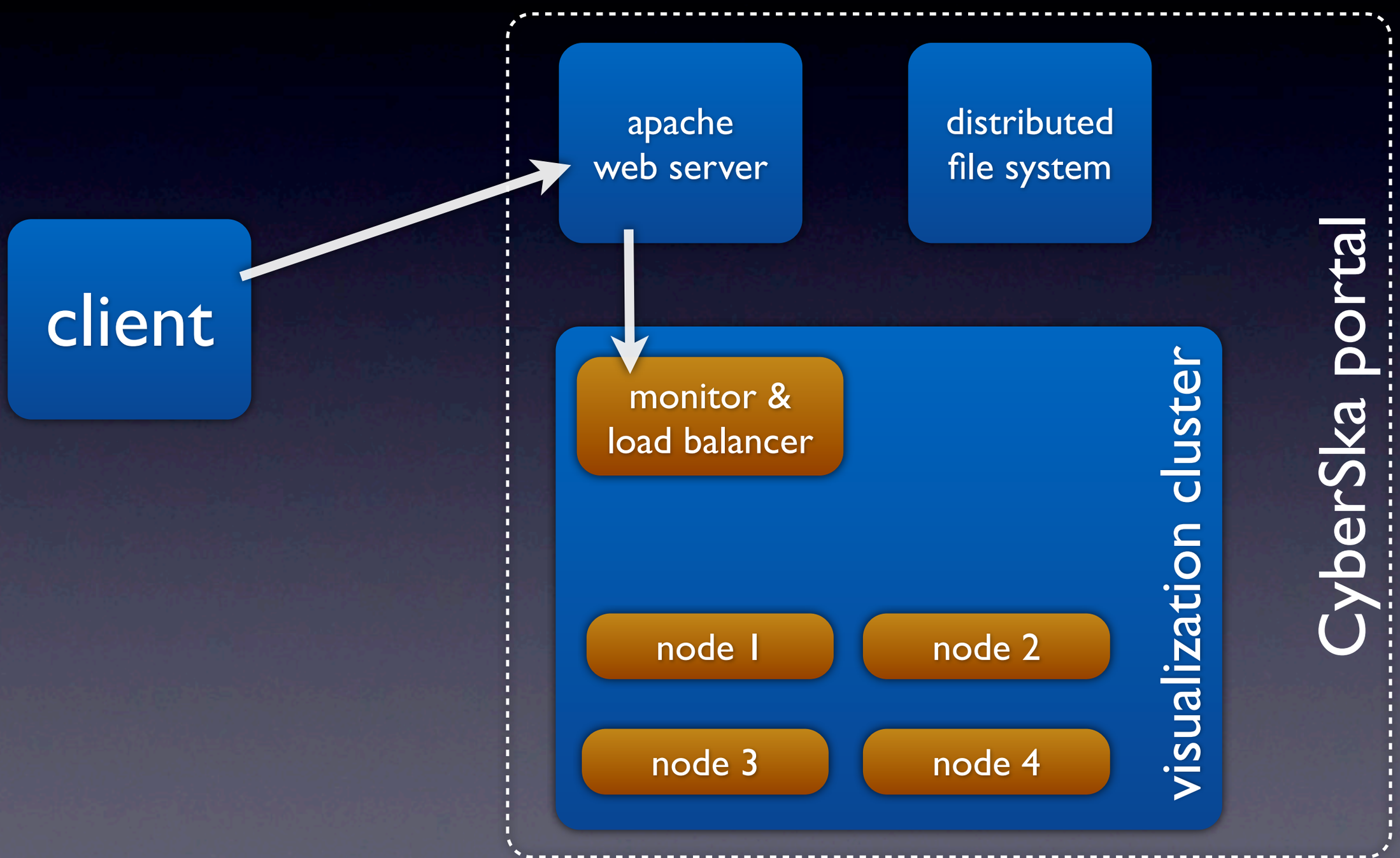
sends JPEG to clients

JPEG

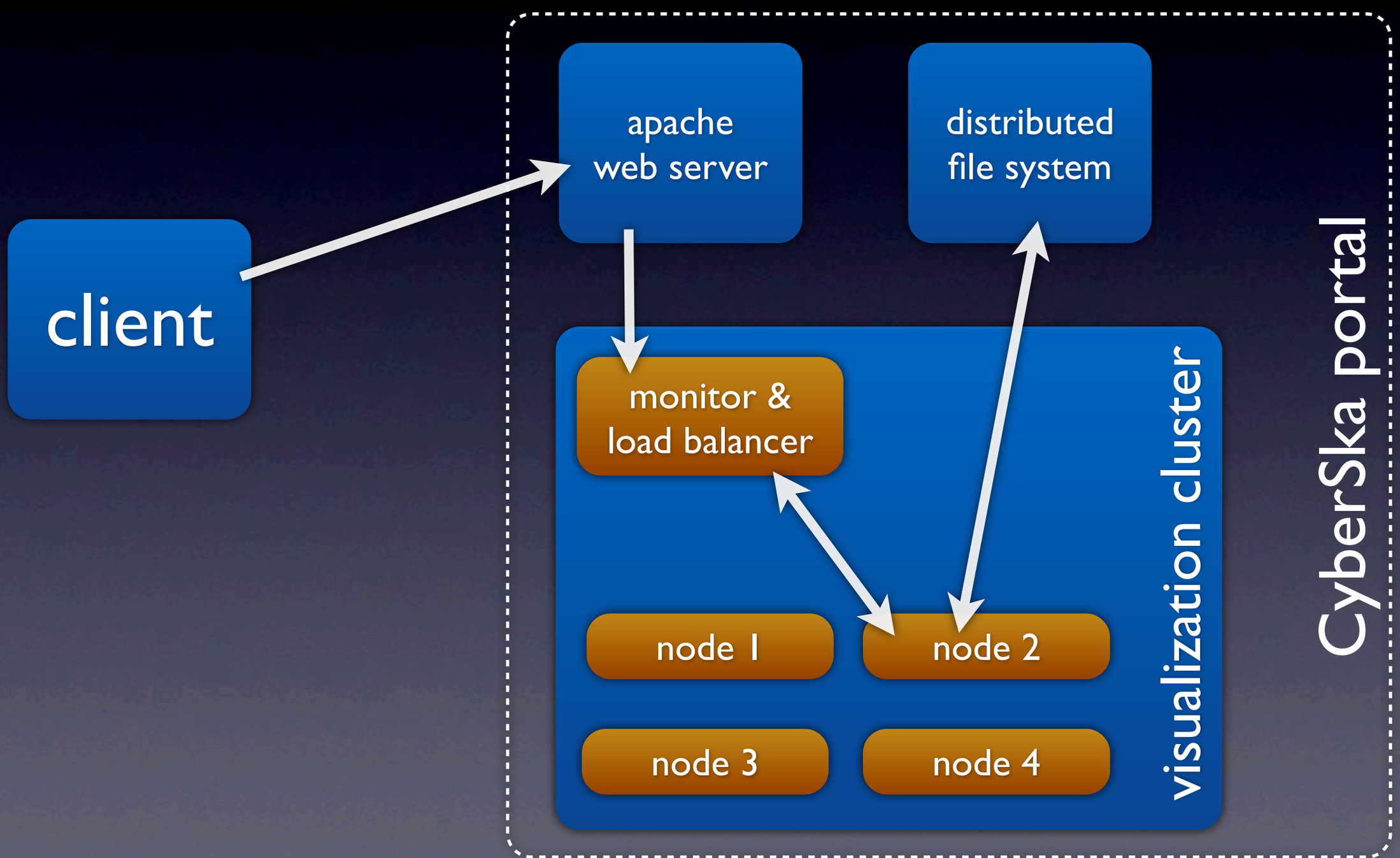
implementation



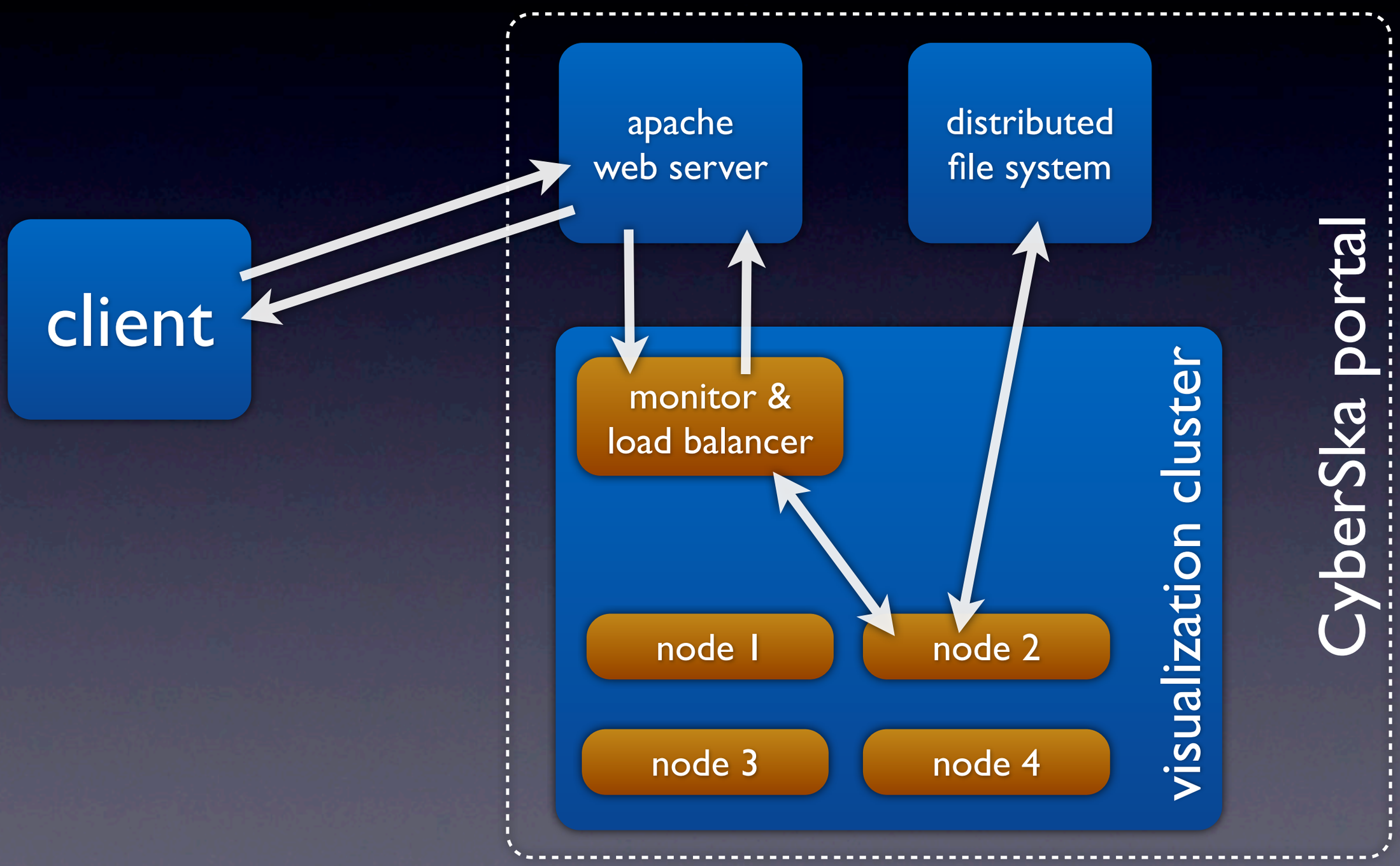
implementation



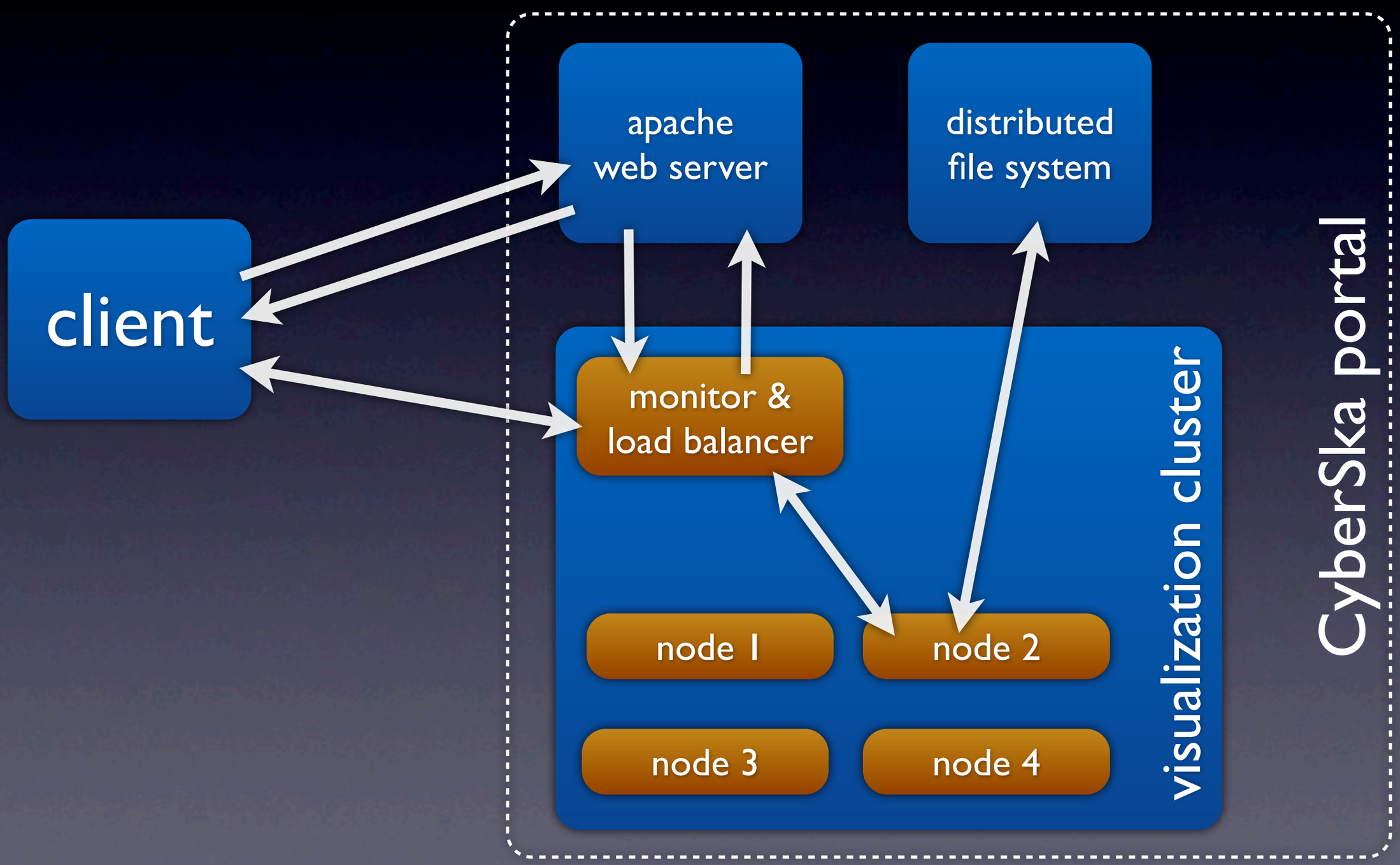
implementation



implementation



implementation



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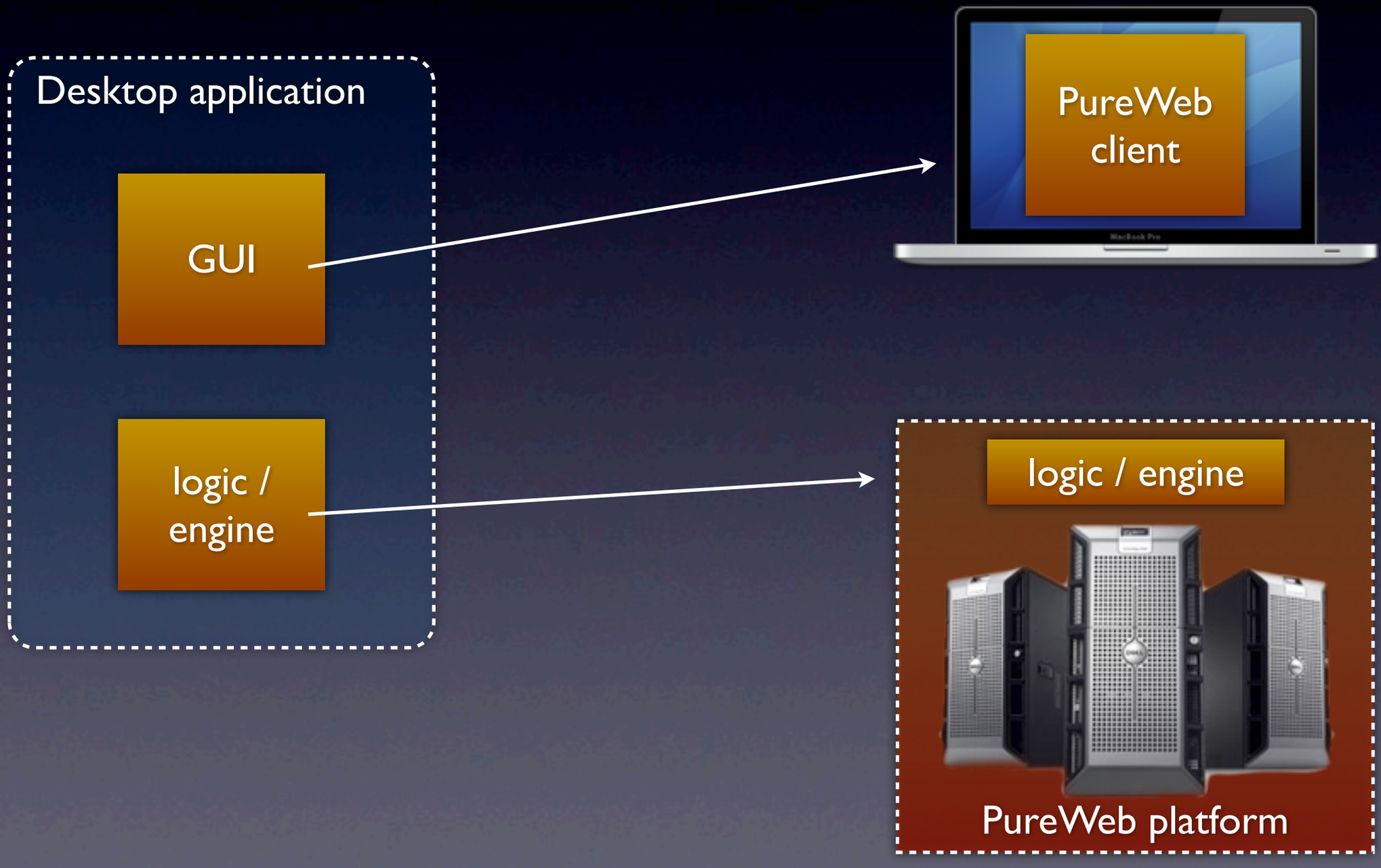
PureWeb

by Calgary Scientific



server-side viewer

future work

- parallel processing and rendering
- experiment with MPEG vs JPG
- switch from flash to HTML5

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Thank you.

implementation