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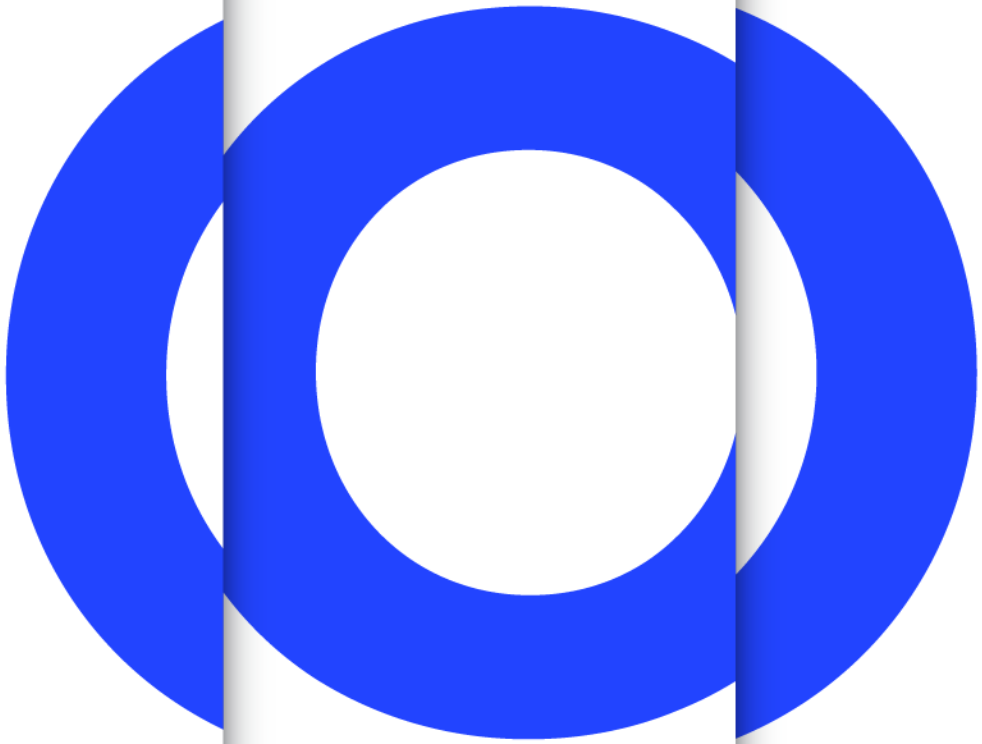

# BROADCASTING FROM THE CLOUD

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# CONTENT

BROADCASTING FROM THE CLOUD

# WHAT IS THE CLOUD?

The cloud concept involves **scalable deployment** models using **virtualized services** on **generic IT-hardware**.

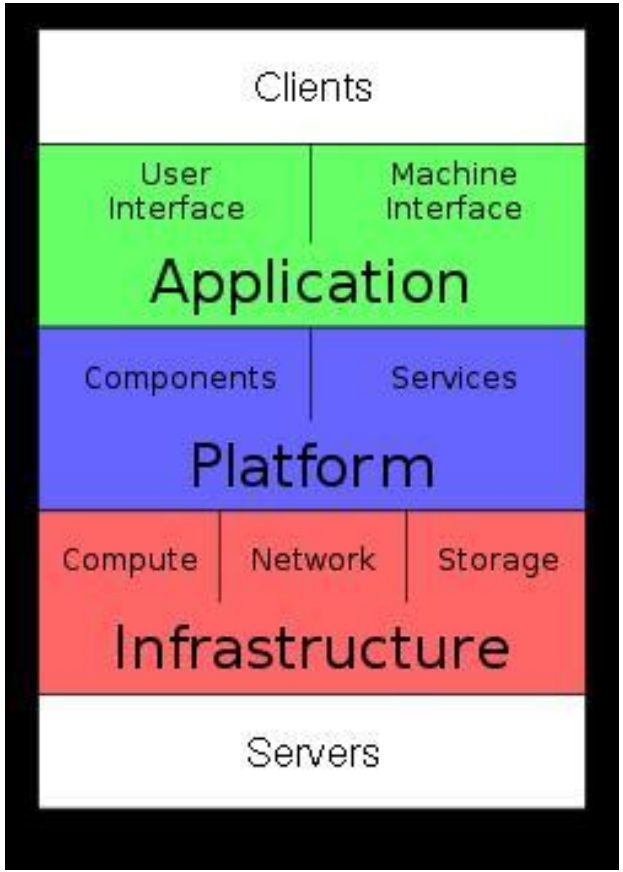
# CLOUD STACK

3 layers:

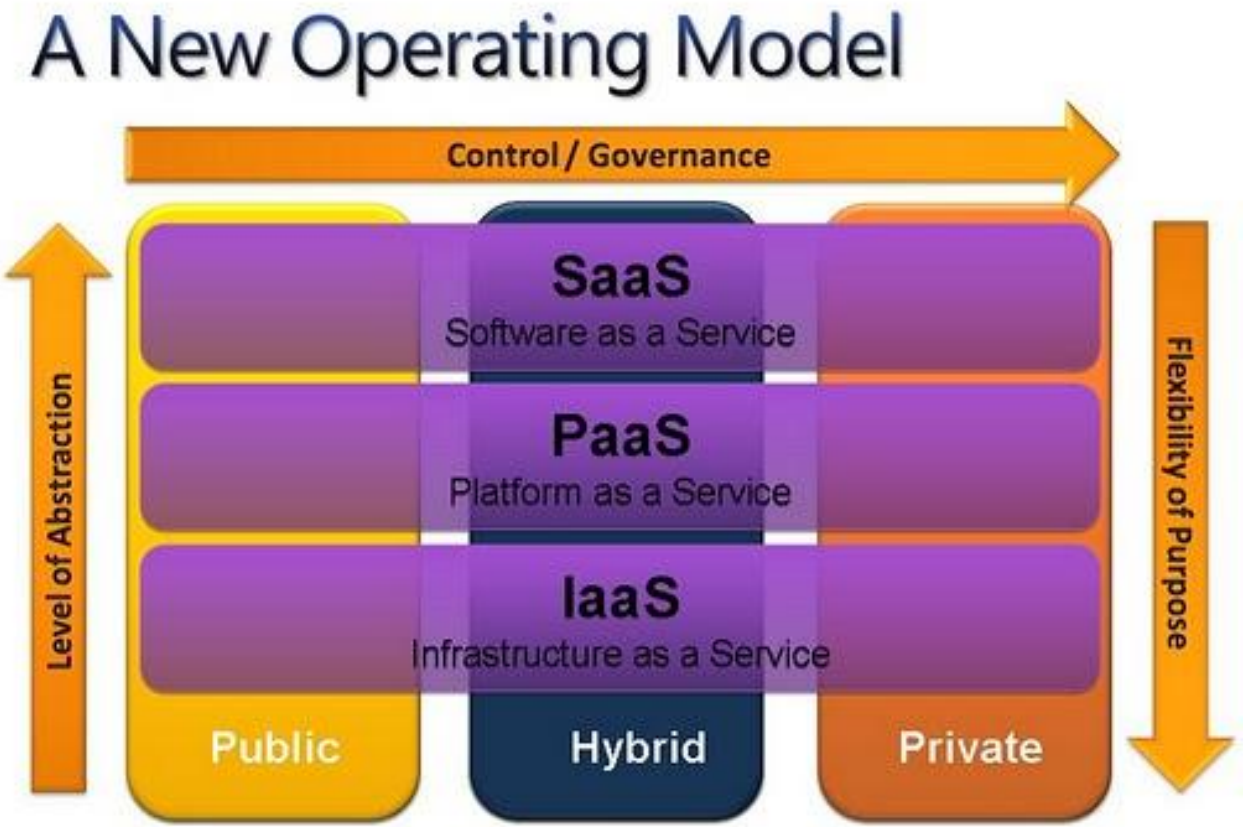
IaaS – Infrastructure as a Service for IT specialists

PaaS – Platform as a Service for application developers

SaaS – Software as a Service aiming at end users



# HYBRID CLOUD



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# WHY IS THE CLOUD SO POPULAR?

# WHY THE CLOUD IS POPULAR

A **payoff** when choosing wisely between temporarily rented and structurally allocated capacity.

**Flexibility** that allows a broadcaster or other provider to adapt to the sudden growth in popularity for a service, as one can temporarily upscale the capacity.

More **transparent costs**, as capacity can be allocated to specific projects rather than to the infrastructure as a whole.

Fast **‘time to market**’ with new services and projects

Virtualization of services using a **hybrid cloud** setup will optimize resources and minimize operational costs by elastically changing the amount of encoding or distribution nodes/tasks in a private and public cloud.

# VIRTUALISATION MOTIVATORS FOR BROADCASTERS

**Production domain**

- *File based production in decentralised but **networked** environment*
- *Specific recording and editing choices for **different screen sizes** and publication platforms*
- ***Communicating workflows**, for example decentralised production facilities*

**Distribution domain**

- *Fragmented payout capabilities payout devices and **fast changing technology** / standards*
- *To **improve user experience** all the content needs to be cached / processed deep into the network as close as possible to the end user*
- *Personalisation and **interactivity** needs*
- ***Fast scaling infrastructures** to adapt to sudden changing audience consumption patters*
- ***Digital fiber backbone** connecting gateways, caches and antennas*

BROADCASTING FROM THE CLOUD

# BROADCAST USE CASE

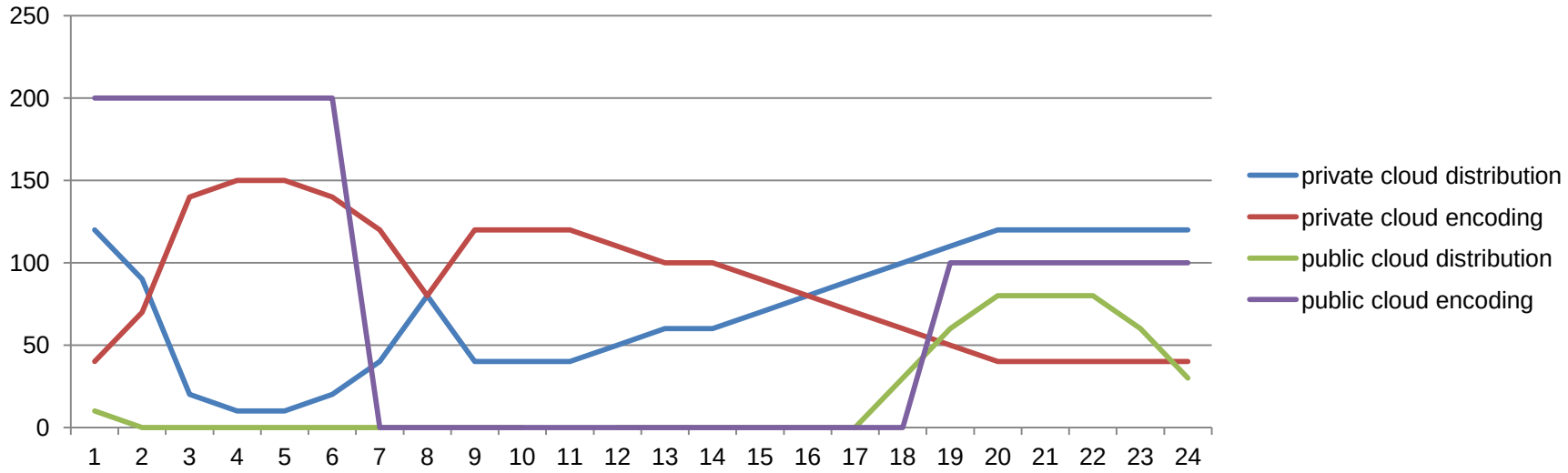
- Encoding of a constant flow of files for publication in multiscreen on-demand services

- Serving a variable amount of concurrent users accessing published content in online on-demand services during the day

- Transcoding of an archive library for on-demand services

# HYBRID CLOUD USE CASE

The first operation requires a constant capacity; the second typically peaks during the prime viewing period in the evening; and the third is not a daily routine but more a one-time effort with a separately allocated budget.

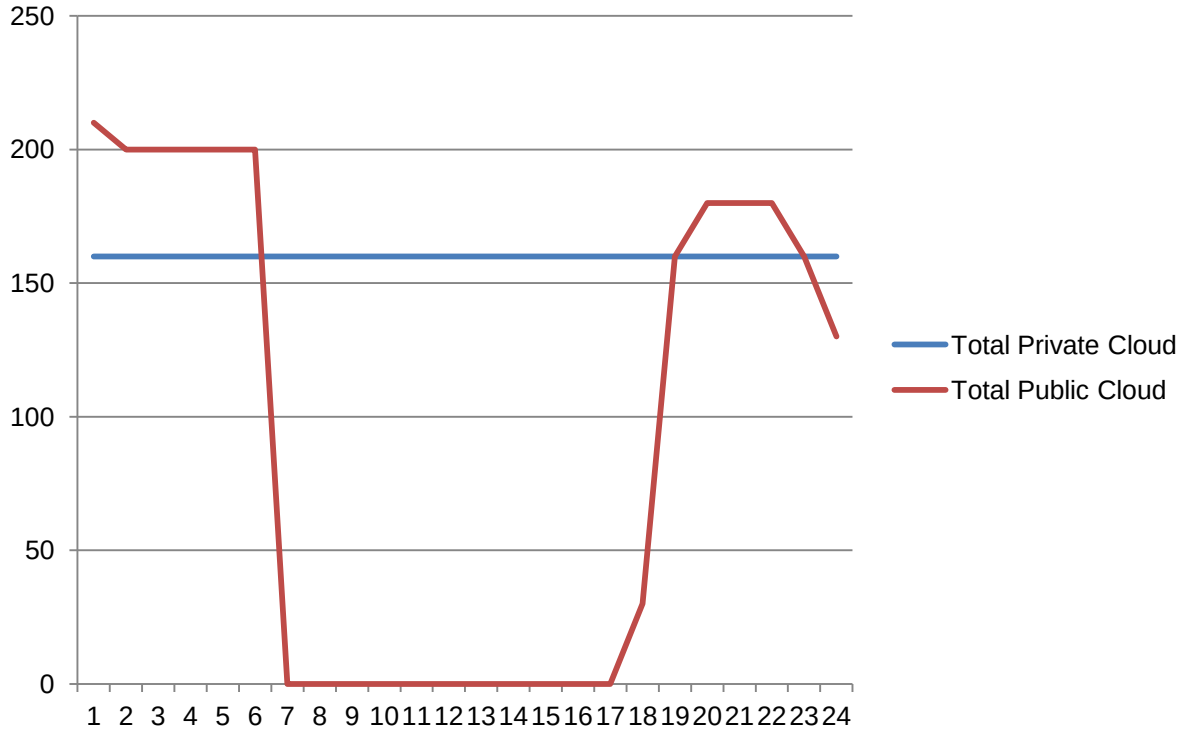


# HYBRID CLOUD BROADCAST USE CASE

- Constant capacity in private setup

- Peak offloading in public cloud or cost efficient upscaling of transcoding jobs

The total constant capacity of the private cloud can be used by different virtualised services during the day.



BROADCASTING FROM THE CLOUD

# SPECIAL REQUIREMENTS OF BROADCASTERS

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# HOW TO GET READY FOR THE CLOUD

- Ownership, security and no interference by foreign countries (Propriaty Act in the USA)
- Low latency even when large files are processed
- Serving a variable amount of concurrent users accessing published content in online on-demand services during the day
- Transcoding of an archive library for on-demand services

# HOW TO GET READY FOR THE CLOUD?

- Encoding of a constant flow of files for publication in multiscreen on-demand services

- Serving a variable amount of concurrent users accessing published content in online on-demand services during the day

- Transcoding of an archive library for on-demand services

# HOW TO GET READY FOR THE CLOUD

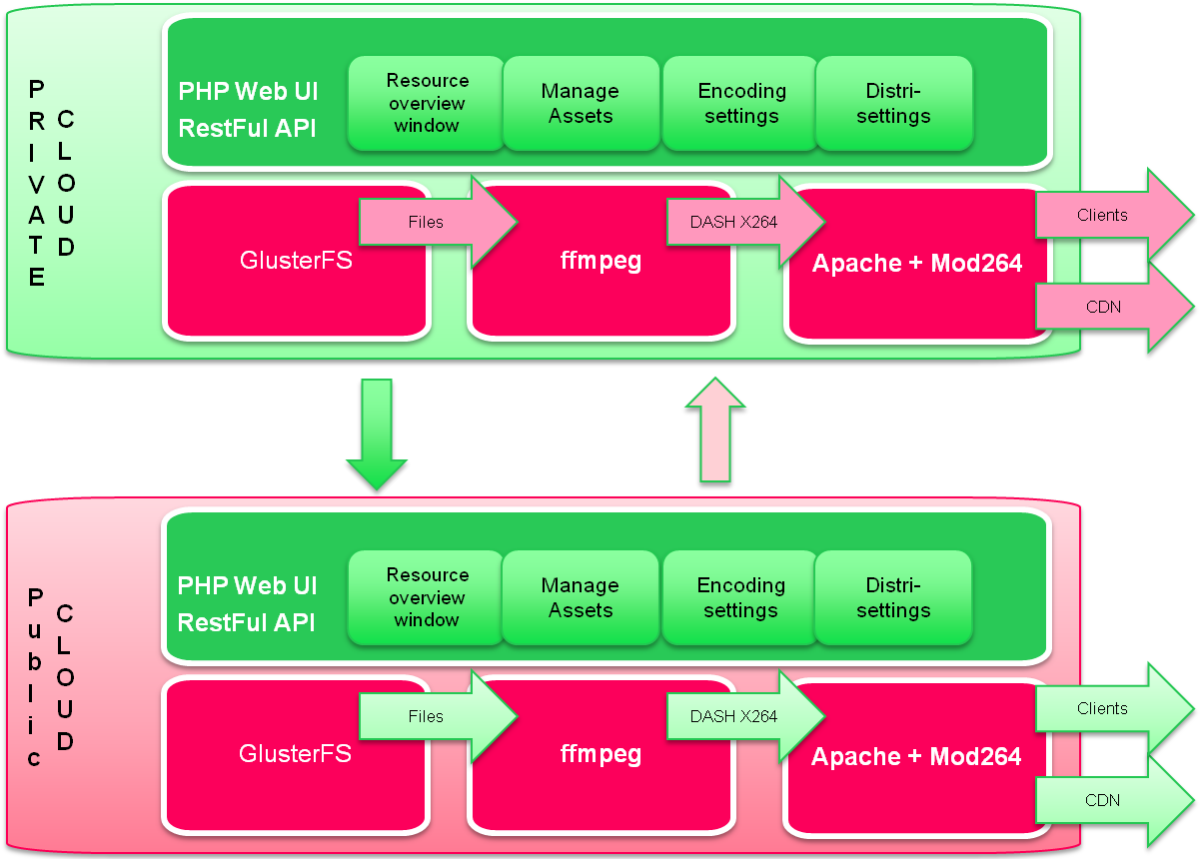
1- Start with testing cloud services in a public cloud

2- When appliances are a success you can optimize costs in hybrid setup

# OPEN SOURCE INFRASTRUCTURE FOR ENCODING TO DISTRIBUTION

Or in short OSCIED:

Proof of concept of EBU demonstrating a hybrid cloud setup optimized for broadcast services.



# YOUR BROADCAST ORGANISATION SHOULD START WITH TESTING CLOUD APPLIANCES

**Scalable cloud infrastructure**

*Virtualisation of storage, encoding and distribution*

*Elasticity: Fast up-/down-scaling  in private and public cloud*

**Manageable services**

*Controlled automatic scaling of virtual services in hybrid cloud*

*Manage settings and control costs*

**All components are open source**

*Library of code embedded in functional service*

*Fast interchange of knowledge and availability of development communities*

**Modular development**

*Use of interchangeable modules, Decentralised parallel development,*

*Separate interface layer using control API,  All internal modules communicate via APIs,*

*SOA compatibility investigated (also looking at SDN/OpenFlow)*