

CloudXstream

OTT in the cloud

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RGB Overview

- Established 2003, leading provider of scalable multiscreen IP video delivery solutions
- Development offices in Sunnyvale, California & Austin, Texas. Support locations in US, EMEA & APAC
- Shipped: \$300m+ lifetime
- 400+ customers in 40+ countries
- Top tier investors and strong board



- 39 patents filed, 25 awarded to date
- Partnerships with Alcatel-Lucent, SeaChange and Ericsson



RGB 400+ Customers in 40+ countries



CloudXtream

The Big Picture: Industry Trends Converging

Cloud-enabled Video Services

Turn-key Private Cloud applications
based on OpenStack

IP Video
Operators are migrating
to an all IP video
infrastructure



OpenStack

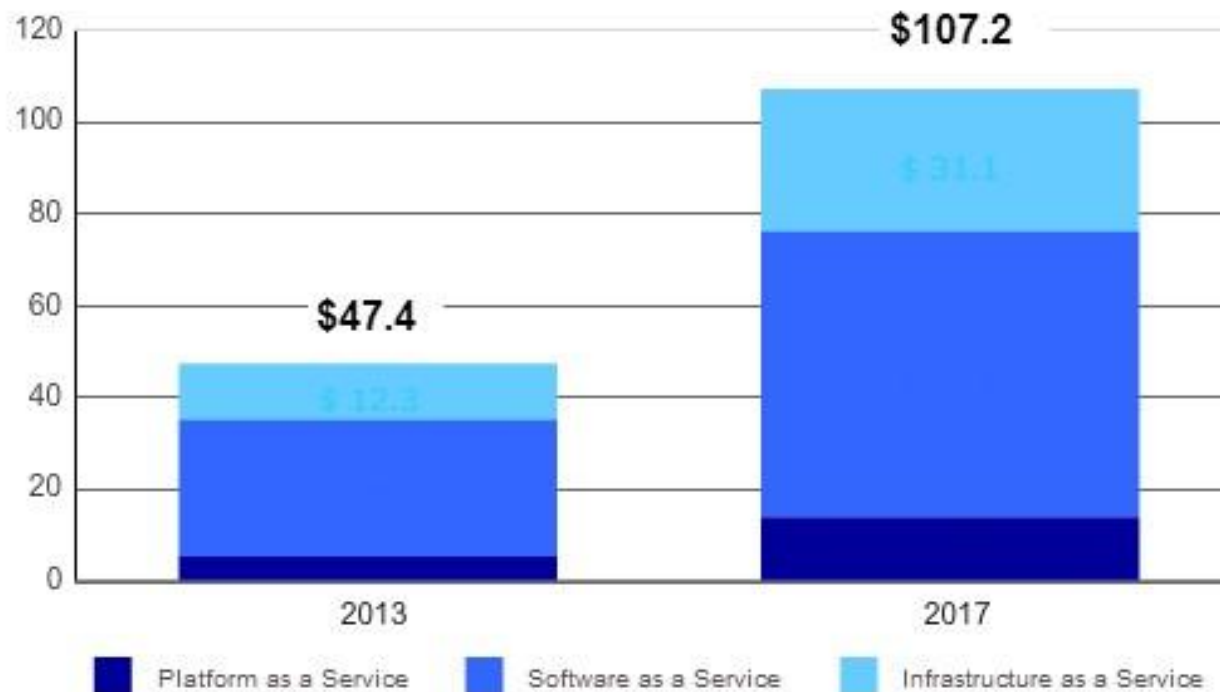
OpenStack becoming the defacto standard
for private cloud deployments

IT Cloud
Enterprises are
embracing public and
private cloud services –
SaaS, IaaS, PaaS

IDC: Public IT Cloud Services TAM



**Worldwide Public IT Cloud Services Spending
by Segment (in \$ billion)**



Informatica: Cloud Adoption

A Few Enterprise Cloud Adoption Stats

Large, Accelerating Market

4-6x

growth rate of
on-premise IT

20-27% CAGR
\$20-40B market

(Forrester, IDC, Gartner, 451Group)

SaaS

largest category

PaaS

fastest growing

(Forrester)

60%

of all companies
using SaaS w/in
12 months

(Forrester)

84%

of net new
software is
now SaaS

(IDC)

Led by Large Enterprises

76%

enterprises
have a formal
cloud strategy

(Forrester)

74%

using cloud
will increase
cloud spend
> 20%

(IDC)

Driven by IT

90%

Cloud decisions
and operations
involve IT

(IDC)

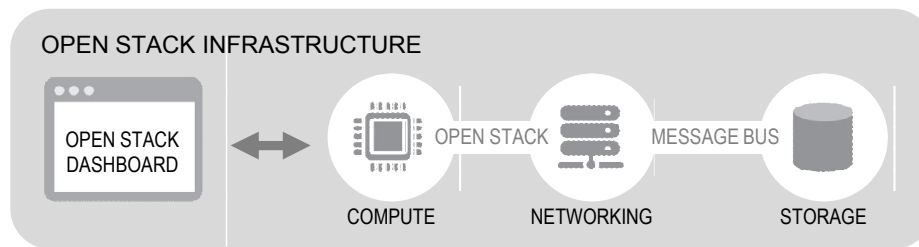
66%

SaaS POs
signed by IT

(IDC)

What is OpenStack?


- OpenStack is an open source Cloud OS
 - Compute, Networking, Storage



- Launched in 2010 by Rackspace and NASA
- Enables DIY Private Clouds
 - Portability to the public cloud or other private clouds
- Almost all major IT companies (180+) are contributors and members

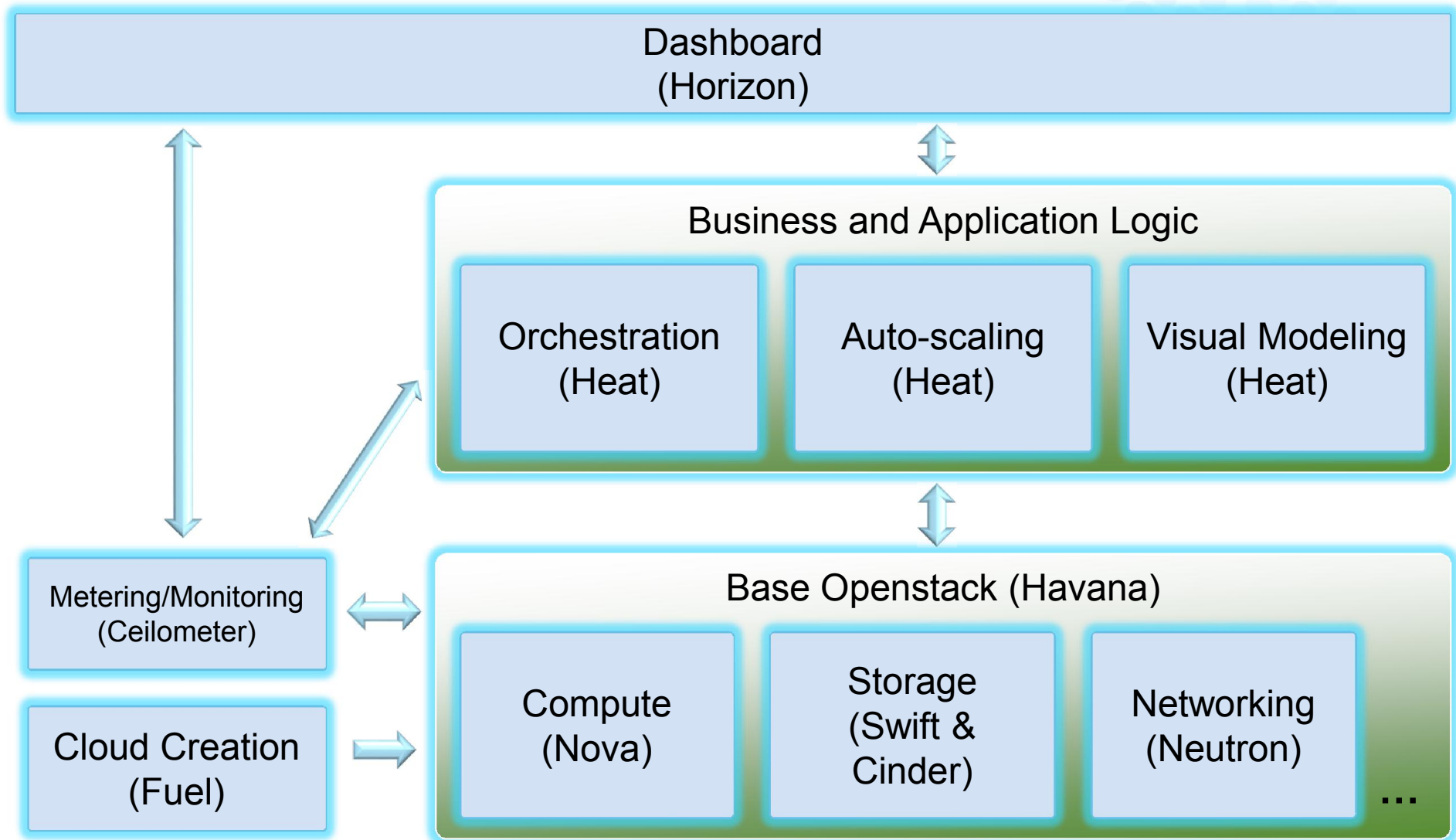
Who uses OpenStack Private Clouds?

- Hosting Companies: Rackspace, IBM (Softlayer), HP
- OS Vendors: RedHat, Microsoft
- Cisco Webex
- Paypal
- Sony Playstation
- Best Buy
- Bloomberg
- Comcast



RedHat launched Openstack compatible products in mid-2013. Openstack went from emerging technology to the defacto industry-standard Cloud OS.

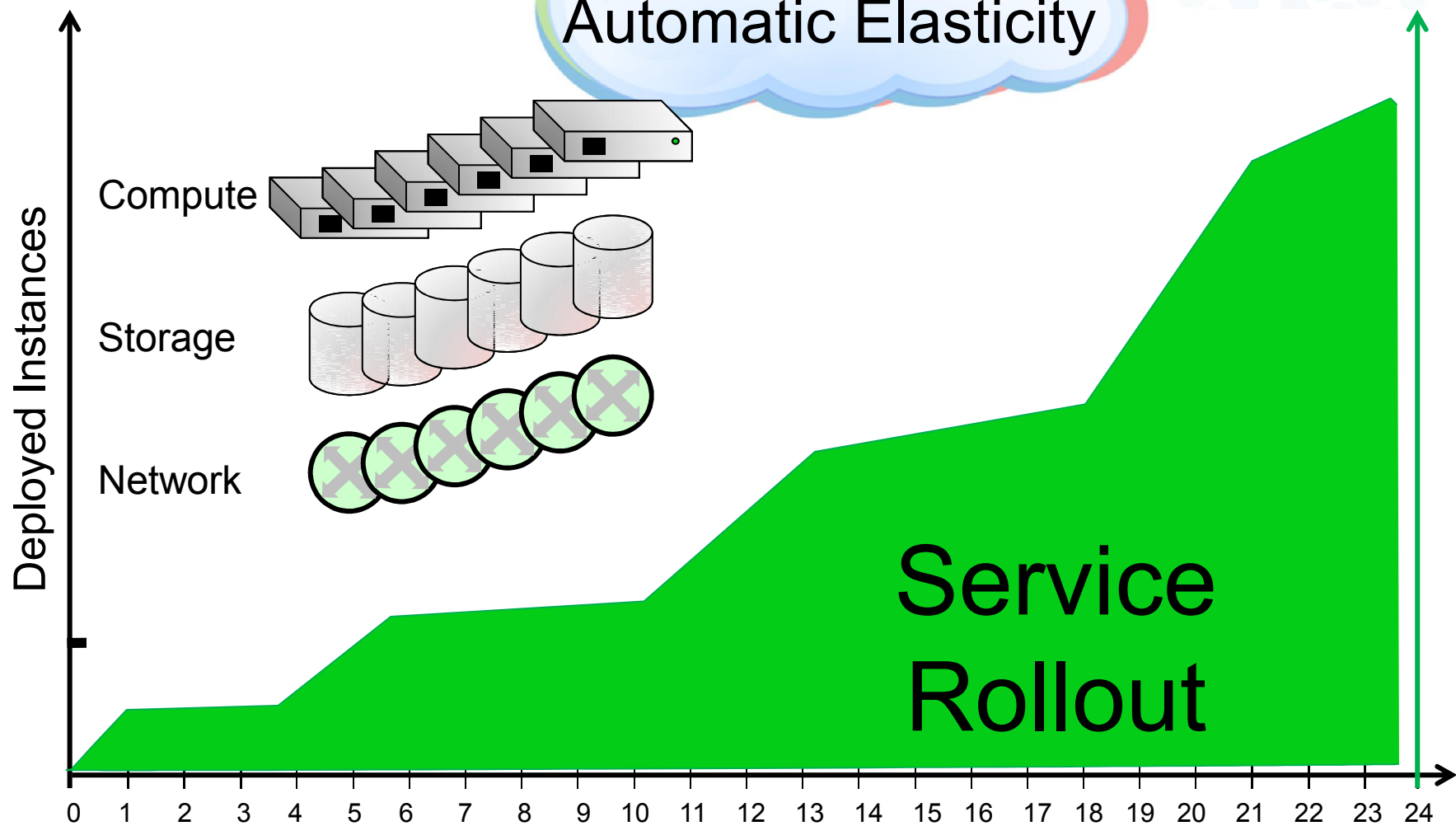
OpenStack Diagram



RGB CloudXtream

- A turnkey deployment for Video Delivery in operator own data center, hosted private cloud, or public cloud
- RGB CloudXtream is built upon the leading open source OpenStack Cloud OS
- Infinitely scalable applications
- Enables virtual environments / multi-tenant
- Dynamic provisioning
- Resource sharing and oversubscription

CloudXtream Automatic Elasticity



RGB solutions based on OpenStack

CloudXtream



Transcoding & Packaging

IPTV/Cable & Multiscreen
Linear & VOD
Transcoding
 Hardware
 Software
Packaging
 All ABR Formats
 DRM Encryption

Ad Insertion

Linear Ad Insertion
Multiscreen Ad Insertion
 Linear & VOD
 Network-based
 Blackout Support
Targeted or Zoned
 SCTE130/VAST
Unified Solution

nDVR

Catch-up & Restart
Event Based Recording
Continuous Recording
Just-in-Time Packaging
Object Store
Origin

VMG Gen1 and Gen2

- State-of-the art video quality
- Converged: Multi-bitrate + Main-screen in one unit
- High availability: input, output, port, card, and chassis redundancy
- Second generation of a proven, successful, widely deployed product



Redundant Configurations	VMG Gen2	VMG Gen1
Transcodes	264 HD, 792 SD, 1056 MBR	108 HD, 324 SD, 432 MBR
Deinterlacing	Motion Compensated	Simple
Audio Transcodes / Chassis*	913	250
Audio Transcodes / Program**	64, 64, 64	8, 2, 8
I/O ports	8x 10GigE	8x 1GigE
Input Redundancy	Program, SSM, Encryption	Program
Output Redundancy	Mirrored Ports, Hot-Hot	Mirrored Ports

*based on loaded chassis for Gen2, **limited by audio transcodes per TCM2

RGB Solutions | TransAct Software Portfolio



■ TransAct Software Products

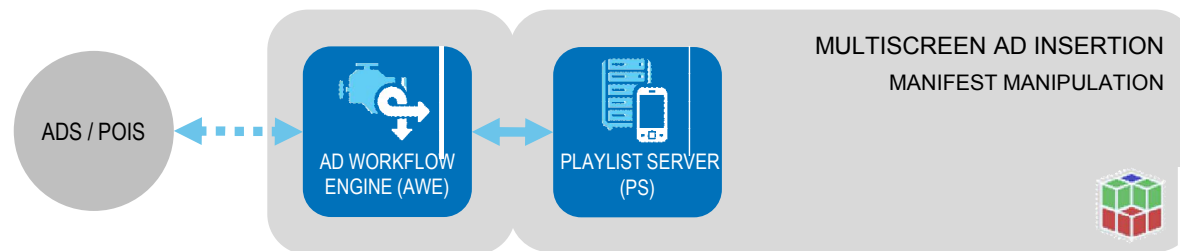
- Linear & VOD Transcoder (TAT)
- Linear & VOD Packager & Recorder
- nDVR Services
- Targeted Ad-insertion
- Interactive Services

■ Unique Capabilities

- Linux Based
- Modular SW
- Virtualized – VMware, XenServer, KVM
- Feature Rich
- Moving to Cloud OS – OpenStack
- Deploy anywhere to any client

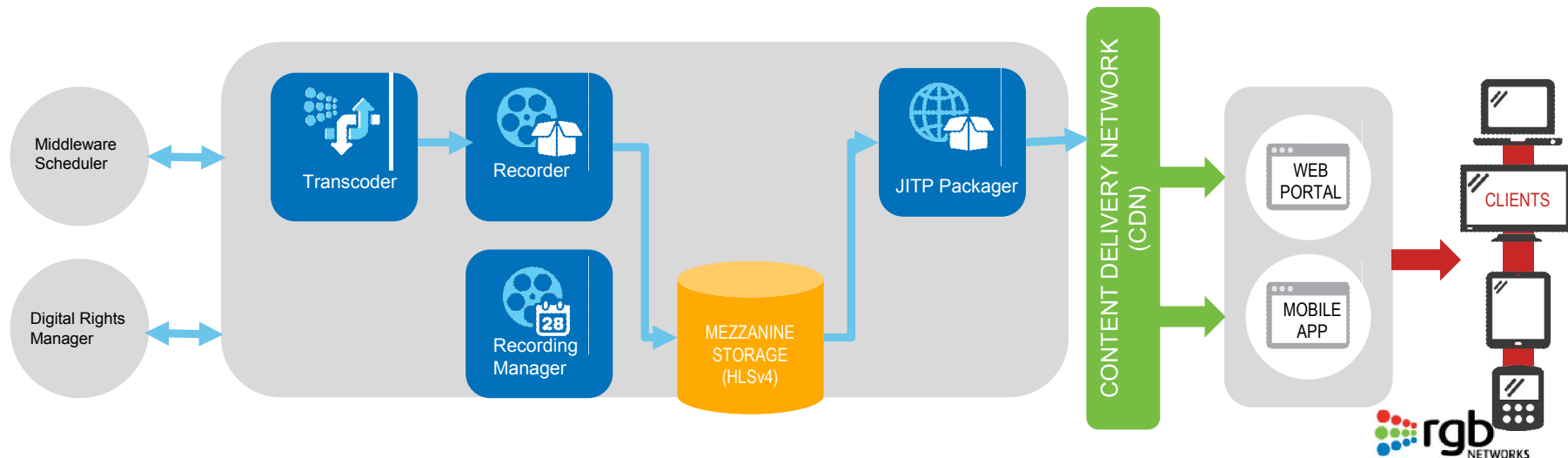
AIM – Ad insertion for Multiscreen

- More than a decade of video advertising experience
- Ad ingest, transcode, align & playlist
 - Support for HLS (future MSS & HDS)
 - Support for Live and DVR
 - Per device targeting granularity
- Support for Program substitution & blackouts
- High availability – redundancy built in
- Live deployments - Serves 22 million subscribers today
- Pre-integrated with leading ecosystem components (BlackArrow, ThisTech, Envivio, Freewheel, Harris Broadcast)

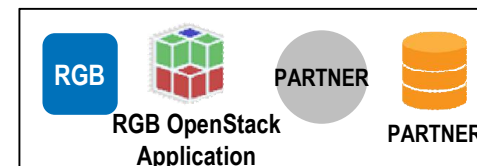
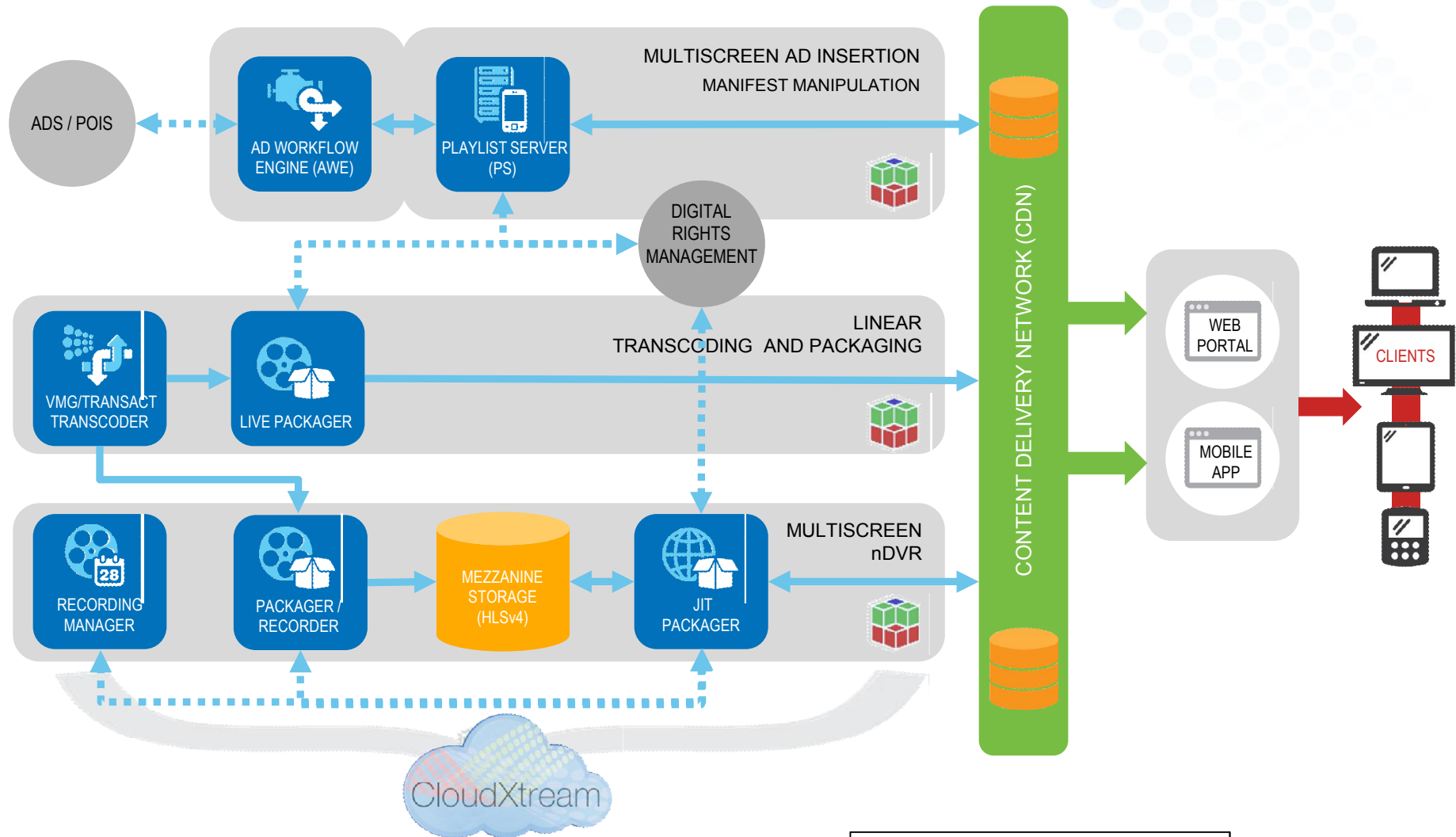


Multiscreen nDVR

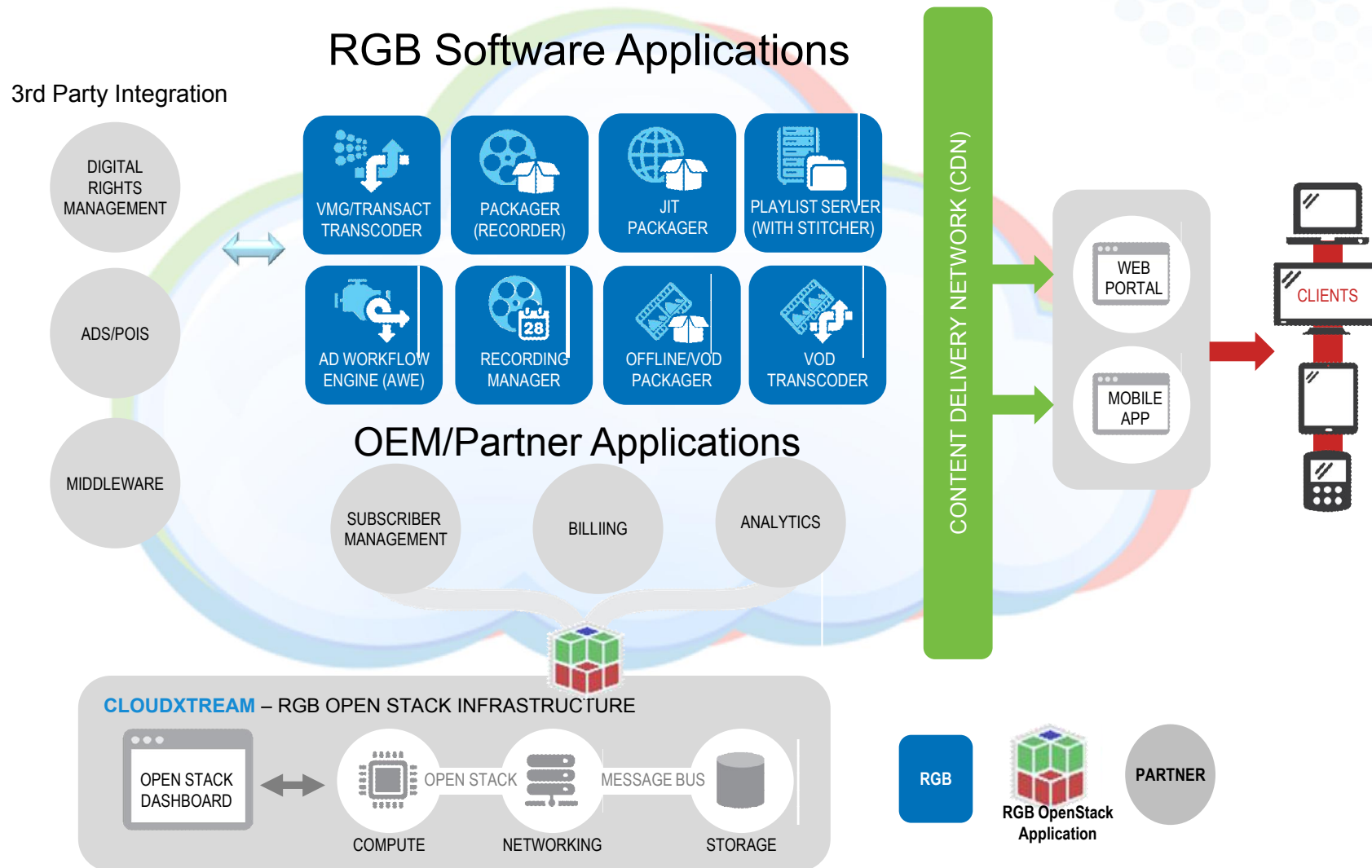
- Live-to-file video capture for Multiscreen
 - Event based – fixed start and end time of event
 - Continuous record – abstracted event, sliding start-stop time
- Operator or user scheduled recordings through Middleware
- Support for
 - Catch-up TV, Time-shift, Hot Record
- Just-in-time Packaging and Origin
 - Delivery of all ABR formats



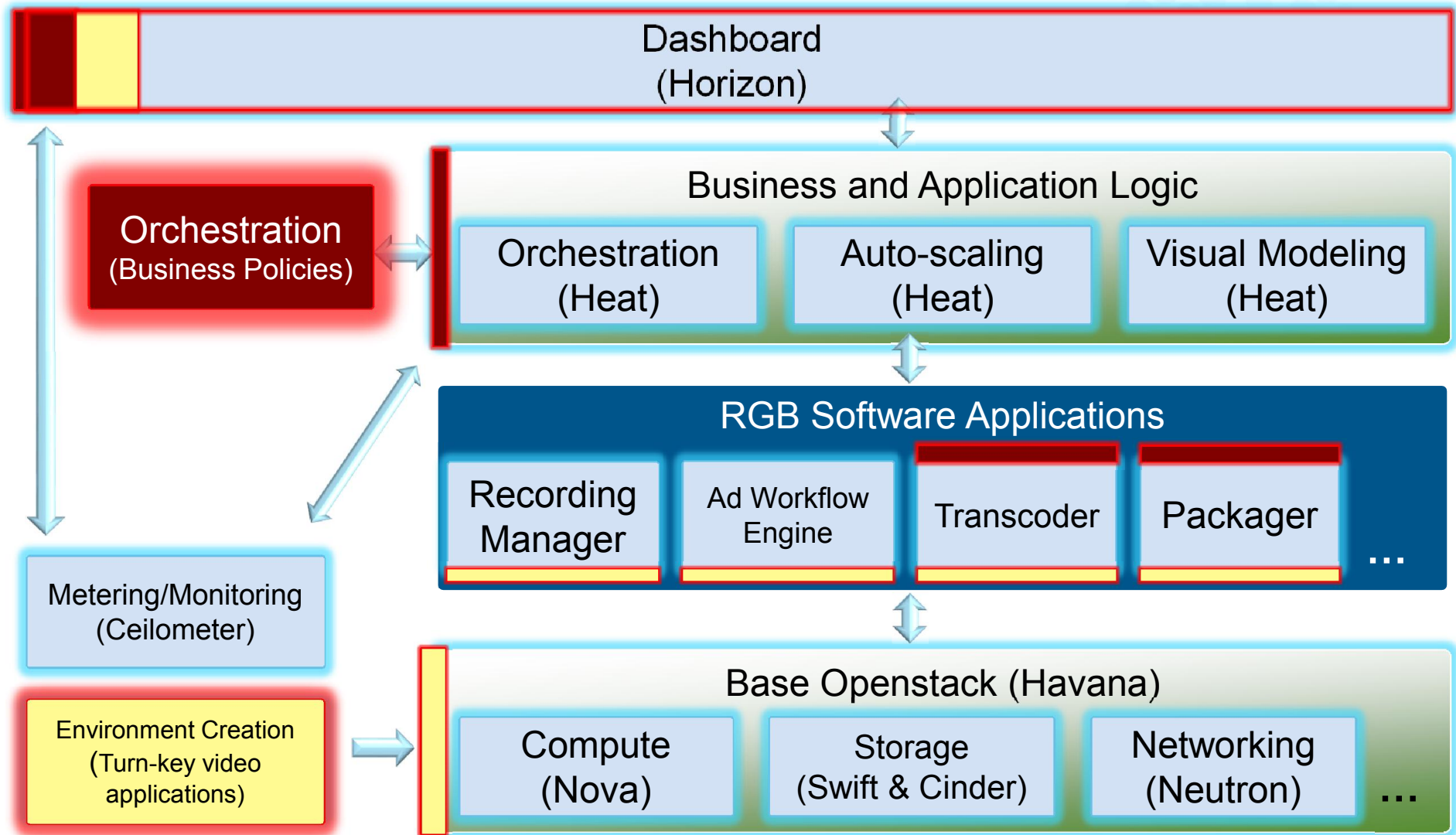
RGB Product Solutions Dataflow



RGB CloudXstream – End-to-End Offering

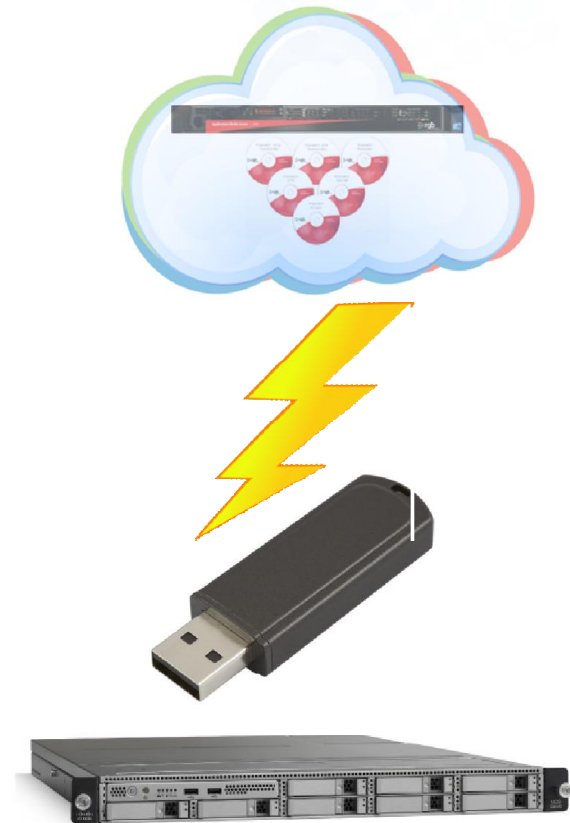


CloudXtream Video Stack



RGB Networks CloudXstream Benefits

- Turn-key cloud and application installation
 - Transcoding, Packaging, AIM and nDVR
- Built-in load balancing
- Geo-redundancy
- Elasticity and auto-scaling
 - Transcoder, Packager, Playlist Server (AIM) and JITP (nDVR)
- “Rent-able” product licenses for traffic bursts
 - Customer can purchase base licenses + Burst licenses for unanticipated demand
- Ease of upgrade
 - Pre-tested instances (Glance images) can be downloaded and installed



Thank You

