

CallT2 IoT Presentation

Cloudpaging for IoT

Arthur S. Hitomi, PhD

CTO and Co-founder

● ● numeцент®
● ● cloudpaging :: delivered

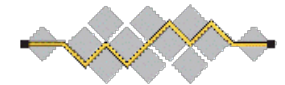
:: About Art Hitomi

- **Co-founder & CTO of Numecent**

- Chief Technology Officer of Numecent from inception
- Solving complex application execution over the web

- **Arthur Hitomi was previously co-founder & CTO of Endeavors**

- Over a decade of creating and implementing application delivery technologies and solutions with many patents to his name
- Pioneer and Inventor of On demand Application Delivery technologies
- His product was a finalist in the Software Development's Jolt Product Excellence and Productivity Awards
- He worked with the IETF on HTTP extensions
- Dr. Hitomi is a graduate of University of California, Irvine with a BS with honors, an MS degree, and a PhD in Information & Computer Science



:: About Numecent

- **Founded in late 2008 – Inventors of cloudpaging**
 - Based primarily in Irvine (CA) and the UK – 36 people & rapidly growing
 - Team previously invented Application Virtualization & Streaming
- **Came out of stealth in 2012 to great industry acclaim**
 - Hailed as groundbreaking and disruptive
 - Technology protected by 14 foundational and battle-tested patents
- **Named a Gartner ‘Cool Vendor 2013’**
 - In recognition of its disruptive technology
- **Between Dec 2011 and April 2013 concluded a \$13.6M Series-A round**
 - Total investment since our inception is around \$23M
- **A B2B/OEM business fanatical about users**
 - Our current customers are ISVs, MSPs, Telcos and Enterprises
 - Quietly acquired 1 million + users worldwide
 - Just closed a \$45M OEM deal with one of the world’s largest cloud providers



The best way to deliver 100% of your apps with friction-free ease.



Cloud Hosted Desktops



On-Prem VDI



Workstations



Laptops



Tablets

See cloudpaging perform in the HxGN Live keynote or visit
numecent.com/hxgnlive

:: Cloud Today



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This technology is protected by a number of US patents

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:: Cloud in the IoT landscape

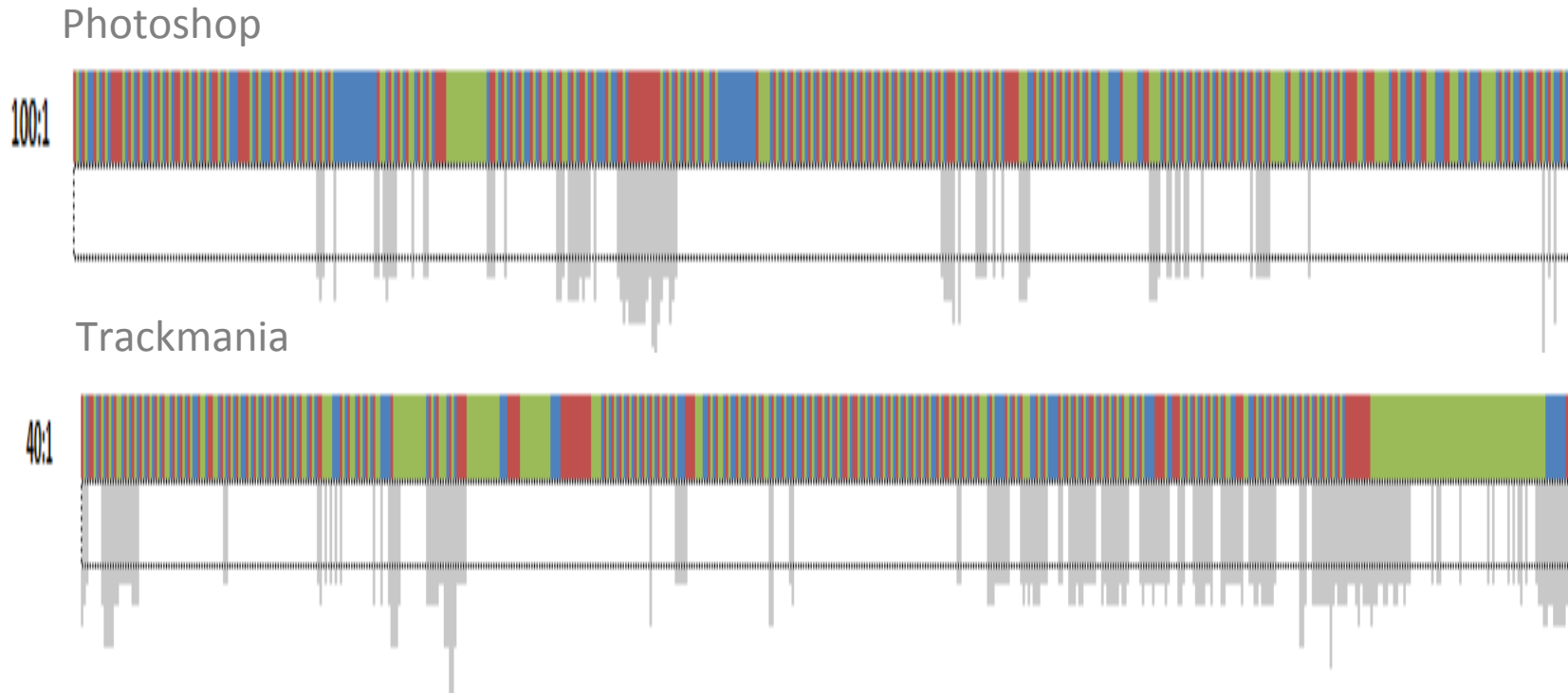


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:: Typical software runtime behavior



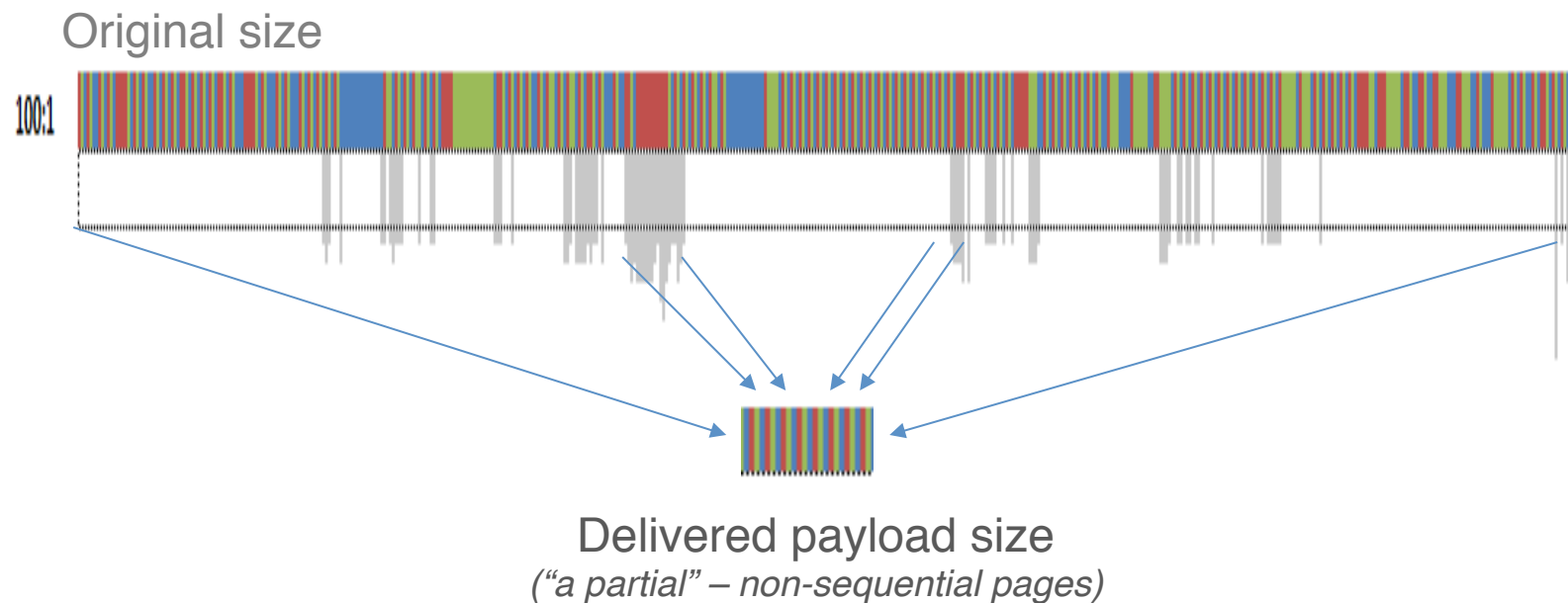
[click for the video](#)

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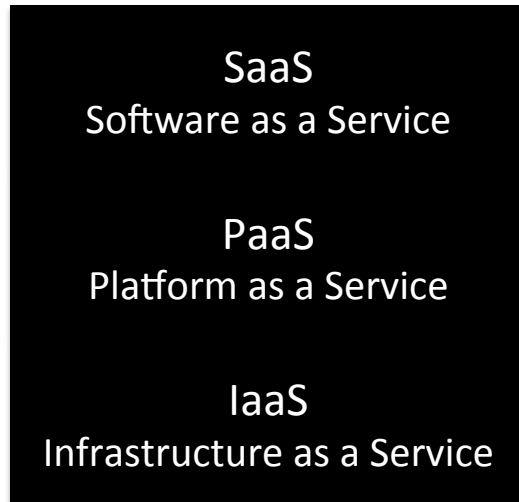
:: Cloudpaging compresses this by 20x or more



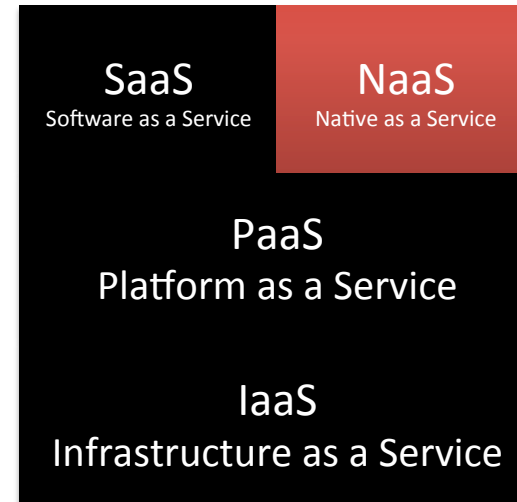
:: NaaS - Extending the cloud service model

Now embracing cloud delivered native applications

Traditional SaaS View
Only applicable to web-apps



Extended View with NaaS
Now Embracing Native apps



NaaS is a disruptive new category

:: Cloudpaging workflow

The effortless on-ramp to the cloud economy



Cloudify any native software – 100%

Even device drivers – no re-engineering of the application or source code required

Separately cloudify plug-ins or parts of an application suite

We offer great tools and services to make this happen rapidly

Publish on the server and optionally SaaSify

Just by clicking on a set of options on the dashboard

No need to re-engineer the software to use License Virtualization

Deliver it 20x-100x faster than linear downloads

All AES256 encrypted and under strong License Control

Time-to-gratification greatly enhanced

95% reduction in network usage - this avoids the download hell

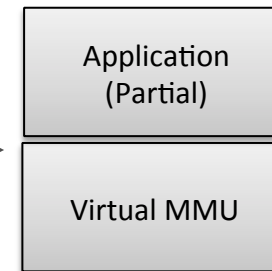
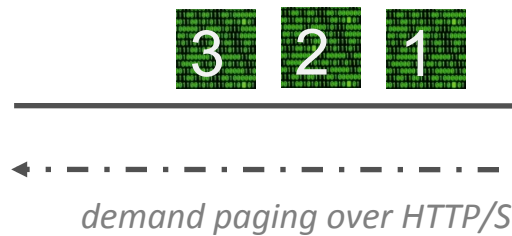
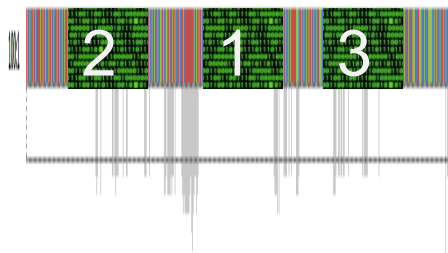
Execute at native speeds without install – even offline

Zero installation - This avoids the deployment hell

Virtualized – keep users happy, agile and without IT headaches

This stage uses our world-class 'application virtualization' technology

:: Virtual MMU



NaaS Client



- Minimal server footprint – 10K users/server instance
- No ping distance requirement – global solution
- Jitter and contention resistant
- Quiescent traffic once the usage pattern is established
- 20-100x better than progressive downloads
- 1000x better than pixel streaming (which can consume 1.5GByte/hour at 720p)

:: Cloudpaging reduces hardware and network requirements



Better Network Utilization

Typically 10x reduction for downloads



Things/User experiences 20x faster downloads



Cheaper Devices

- Less Flash Memory required
- Less network transmission
- Less power required for software delivery and updates



Source Diversity

- Fully leverages HTTP
- Secure
- Rapid deployment
- Rapid updates

"Blew my mind"

All Things Digital.

"Pure freaking magic"

VentureBeat

"Makes any app a Web app"



"BLOWN AWAY
could change the entire
software industry"

BUSINESS
INSIDER

"Have not seen anything like this before"

Forbes

"Instant gratification"

WIRED

"magic is the term to describe this"

FASTCOMPANY



EMBARCADERO
TECHNOLOGIES.

PARSONS



INTERGRAPH

WYSE



redhat

SKYLINE
CLOUD SERVICES BY UNIDATA

PTC®



MICRO
FOCUS

Bentley®

ICAP

CASEWARE

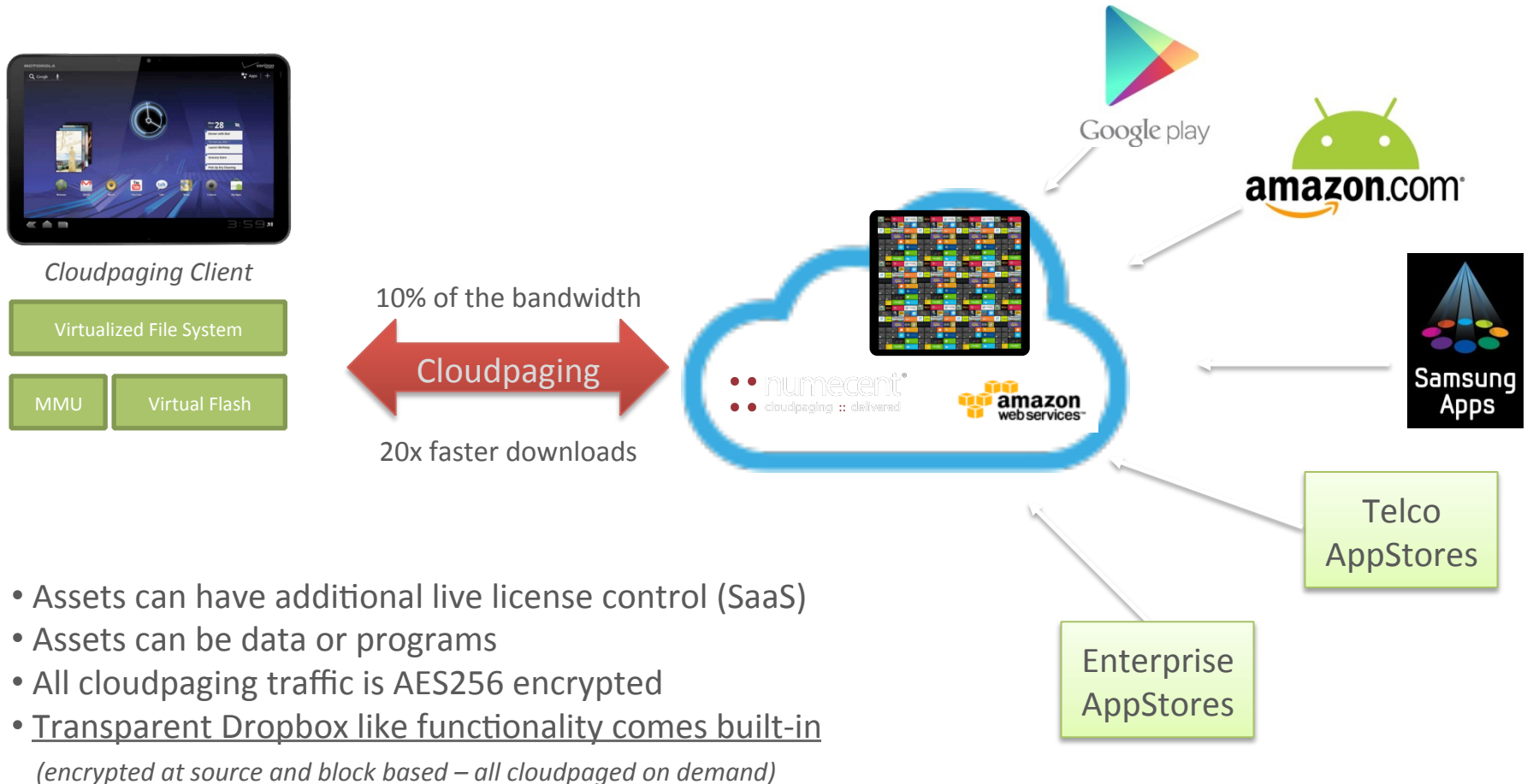
Parallels™

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:: Plays well with existing ecosystems



:: Embedded Cloudpaging



Cloudpaging Client

Virtualized File System

Demand
Paging

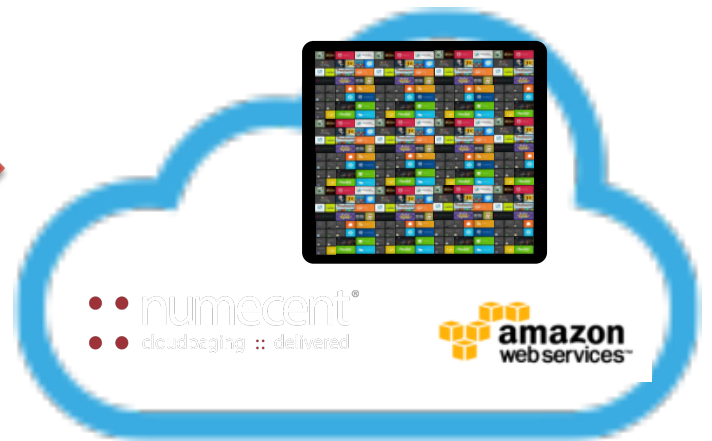
Virtual Flash

10% of the bandwidth

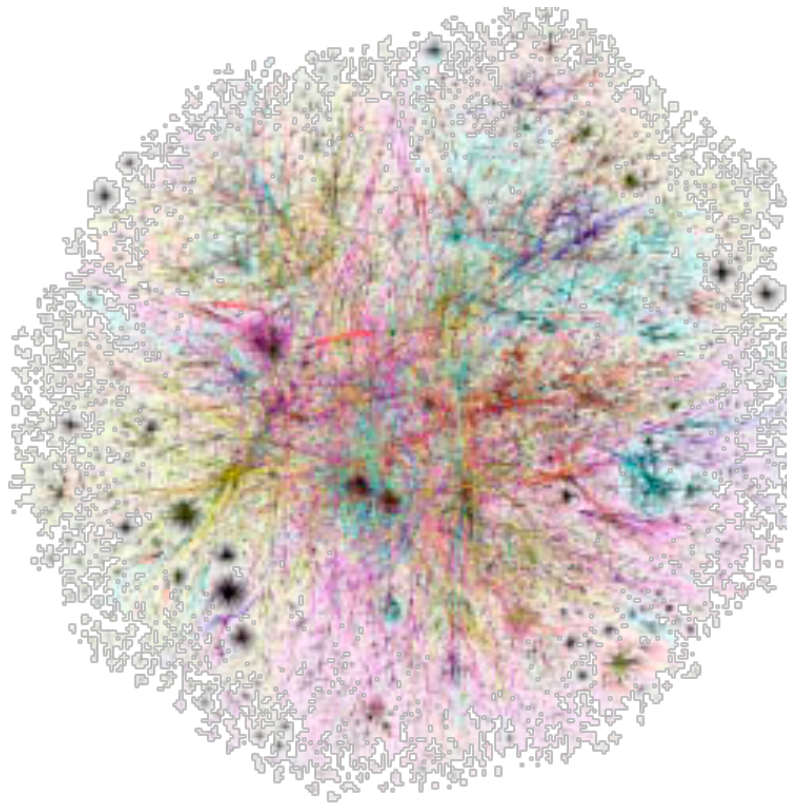
Cloudpaging

20x faster downloads

Virtual device instance in the cloud



:: Heuristic pushing of pages



The Software Genome

- We statistically infer the relationship between page-requests and create a highly informative predictive engine
- By predictively pushing pages, we increase perceived network performance
- The graph of inferred page relationships gives an extremely detailed data on how users are progressing through apps.
- This can provide a great 'user analytics' and instrumentation tool for ISVs

:: IoT delivery to embedded devices

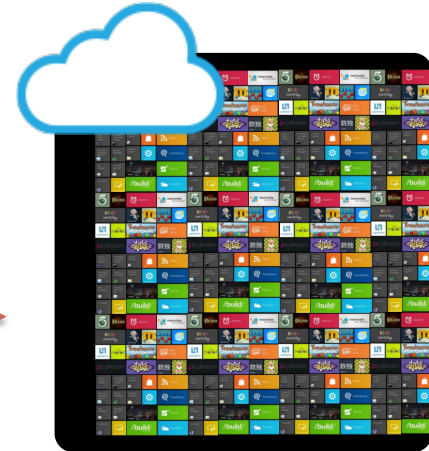


Better Network Utilization

Typically 95% (20x) reduction for downloads
Less congestion for users – good for Telcos



User experiences 20x faster downloads



Cheaper Devices

(SKUs with less flash)
Less subsidies for Telcos

e.g. 8GB device with Cloudpaging
as good as a conventional 32GB device

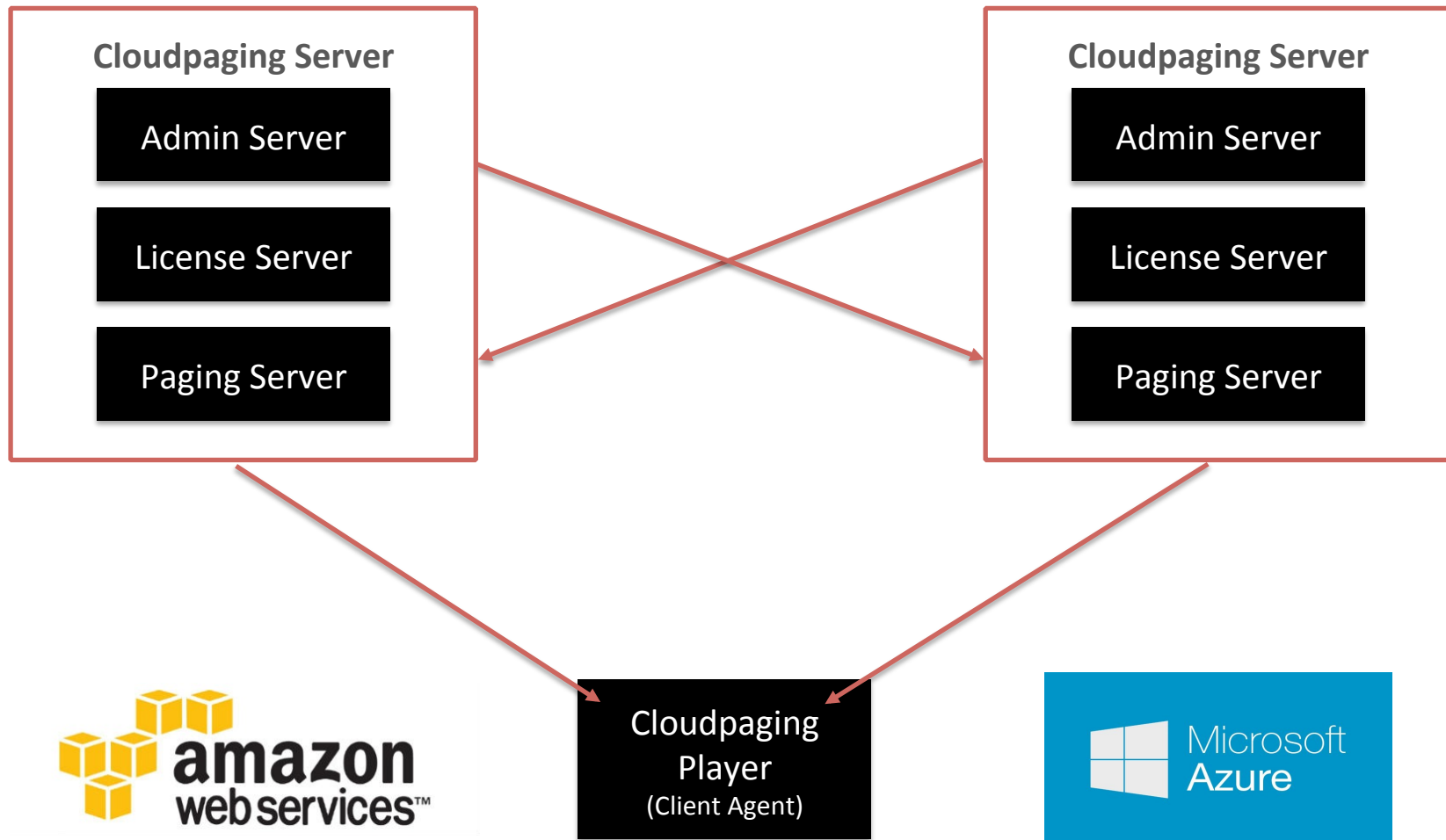
Longer battery life
(because of less network I/O)

Sticky Meta-Ecosystem

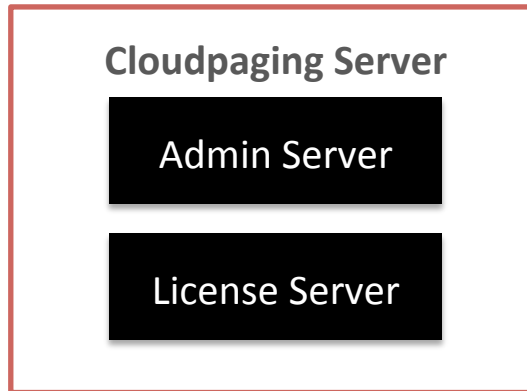
Cloud Storage
Agility Services

Everything in one place including apps
regardless of their origin

:: Run on any cloud



:: Ubiquitous Paging Services



Paging Server



NAS Box

Paging Server



Access Point

Paging Server



Smartphone

Paging Server



On-Prem Server

:: internship

Candidate must be working toward a BS in a computer related field, have knowledge of a programming language and experience with Windows platforms. Linux is a plus!

:: associate software engineer

BS in Computer Science or a related field, 1-2 years of experience with C++ or Java and related development tools (Visual Studio, Eclipse) and an understanding of agile software development processes.

:: software engineer

BSEE, CS or equivalent degree, 3-5 years of experience with C++ and Java programming, experience with client/server architecture, developing multi-threaded client applications on Windows.

:: senior software engineer

BS in CS or related field, 5-7 years of software development including C/C++ and Java with strong OO skills, experience developing multi-tier, large deployments and fault-tolerant client/server solutions

:: software manager

Minimum of BSEE, CS or equivalent degree, 10+ years of software engineering experience, including 1-2 years as a development lead/manager, and strong C/C++ programming object-oriented skills (Java a plus).

:: product applications engineer

BS in CS or equivalent degree and 5 years' experience in the IT industry in a technical, customer/prospect facing capacity, installing and demonstrating B2B software solutions of a complex, technical nature.

We have grand and ambitious plans for this year and beyond... come be a part of it!