

## Kaltura and the AWS Migration

What happened, and what happens now

October 1, 2020



## Executive Summary

### Why Kaltura Migrated to AWS

In the last year, video usage grew by 200-500%, depending on the metric. Kaltura needed to move to a more scalable cloud provider to accommodate the growing demand.

#### What Happened

As the global covid-19 crisis accelerated, video usage have accelerated even further, forcing us to move our plans up by more than six months. The temporary measures we had put into place to handle the overwhelming load began to falter on the eve of the migration, and then the global internet outage occurred during the migration itself. This resulted in the transcoding queue backing up, and service becoming unreliable.

#### Where We Are Now

We can now report that we have fixed most of the issues, and the numbers prove it—error rates and wait times are going back to normal. Many of them are better than before the migration. The benefits we initially planned for—greater stability, scalability, and overall user experience—are already starting to appear.

#### What We Learned

We deeply apologize—not only did we not deliver the experience you expected, we did not adequately communicate before and during the migration. We're committing to deep internal technical reviews, and a promise that future developments will be better communicated.

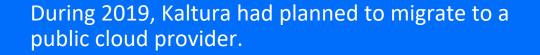
### What's in This Report

We have compiled additional details on the events of the last month, along with a look at our actual metrics and what has been happening on the backend.

## Why Kaltura Had to Migrate



The AWS migration had always been planned.



• This would offer greater elasticity and scalability, including greater redundancy, automatic server spinup and failover, unlimited memory, no limitations on capacity, and improved backup.

At the beginning of March 2020, we chose AWS.

- At the time, the plan had been to finish the migration by March **2021**.
- Then COVID-19 hit the US, and we saw a spike of up to 500% in video consumption (depending on service) in just a few days.

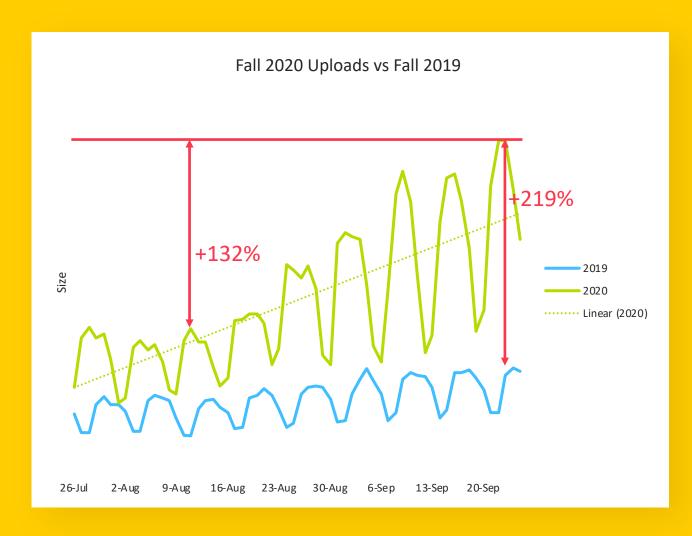
After the first wave of COVID-19, we dramatically accelerated the plan.

- In May, we changed the goal to completing migration in time for the Sept 2020 school year.
- Challenges with the accelerated timeline causes us to slip two weeks, making Aug. 29 the earliest possible date.
- It was just in time—capacity issues caused noticeable outages on August 26 and 27.
  kaltura

## Changes in Kaltura Usage

Overall usage has soared not only compared to last year, but since August

Since mid-August, uploads have increased by 132%; comparing against the same time period last year, uploads increased 219%.

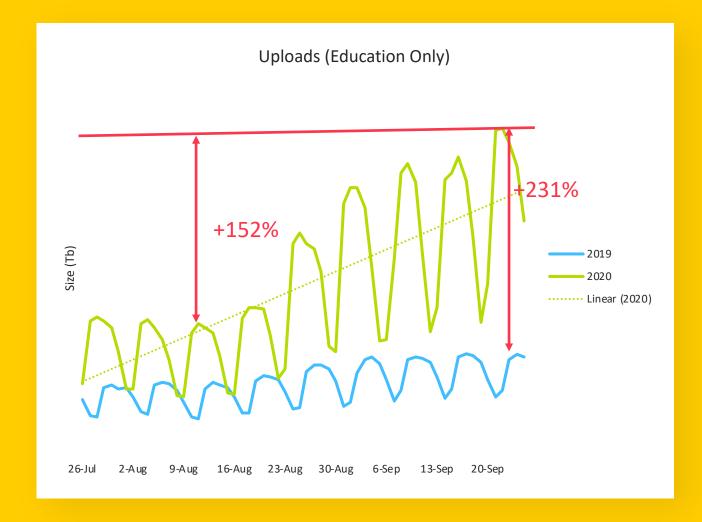




## Kaltura Education customer usage has exploded

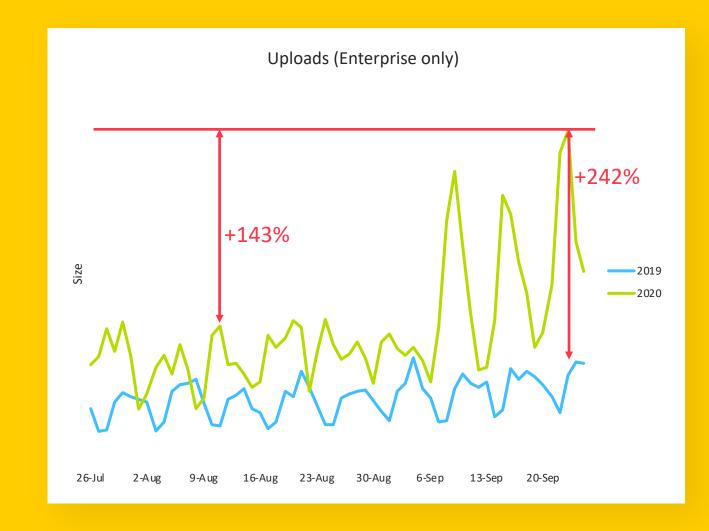
Most years feature a small bump when school starts.

Since mid-August, uploads have increased by 152%; comparing against the same time period last year, uploads increased 231%.





Kaltura Enterprise uploads alone have scaled up dramatically in September





Viewing time and transcoding time show similar spikes

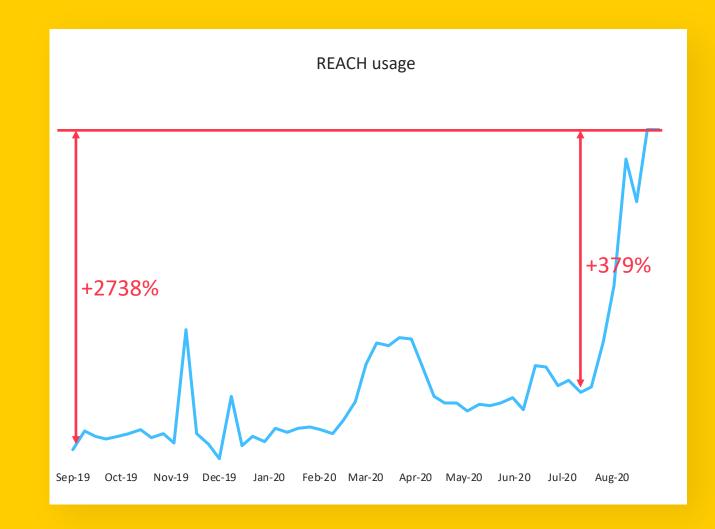




## Changes in Partners Usage

Captions through REACH surged even more dramatically

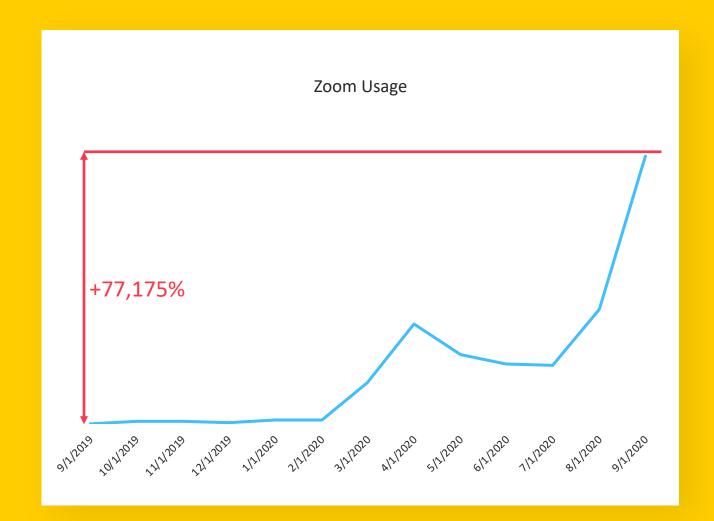
In the last two months, REACH usage has increased 379%.





September Zoom entries far surpass previous April peak

Importing Zoom entries went from minimal adoption to massive usage.





## What Happened



## The migration faced unexpected challenges.

The migration began Saturday, August 29<sup>th</sup>.

On Sunday, August 30<sup>th</sup>, a global internet outage\* occurred.

- This interrupted end-to-end tests, causing major issues and delays.
- The temporary AWS solution meant to bridge the gap until the migration was complete could not handle the increased load that started the week of August 24<sup>th</sup>.

Multiple issues compounded until a massive transcoding queue formed.

 As a result of the jobs' downtime during the incidents of August 26th-27th, and the migration days of August 29th-30th, a huge queue of transcoding jobs accumulated, and during the week of August 31st, customers suffered from a number of issues, including uploading and transcoding delays, playback, webcasting slide sync issues, API latency, and caption delays.



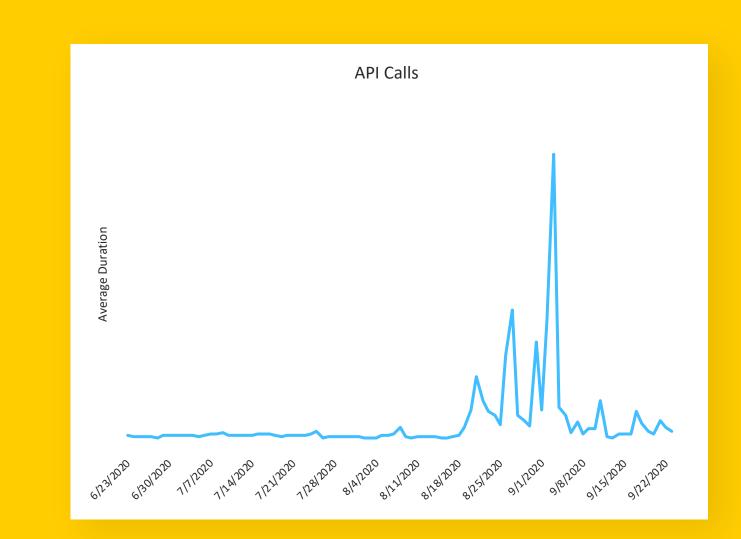
Now the Good News: Kaltura Servers Are Stable, and Benefits Are Starting to Emerge



## API call response time is returning to normal

Response time started to grow in late August, and then spiked shortly after the migration.

While still a little longer than before August, response times have dropped dramatically and are starting to level out again.

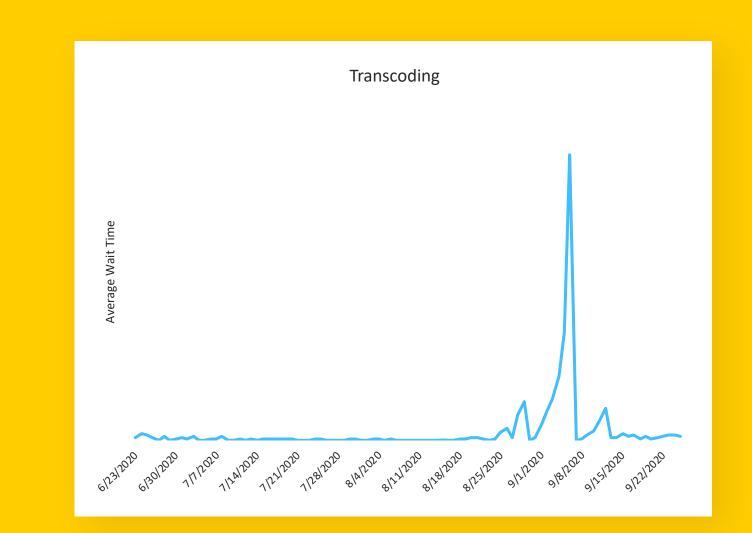




## Transcoding wait times have also leveled off

The queue has been cleared, and new media should no longer stack up waiting.

Transcoding times are starting to return to premigration levels.

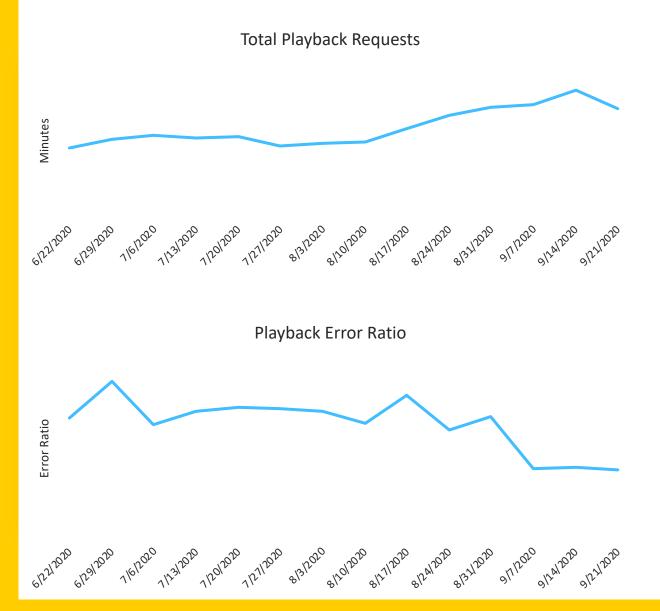




Playback errors are getting back to normal, even a little lower than previously

Playback requests have grown over August and September.

Despite this, playback error ratios are now lower than they had been in the past. Now that we're past migration, viewers will start to see better performance overall.

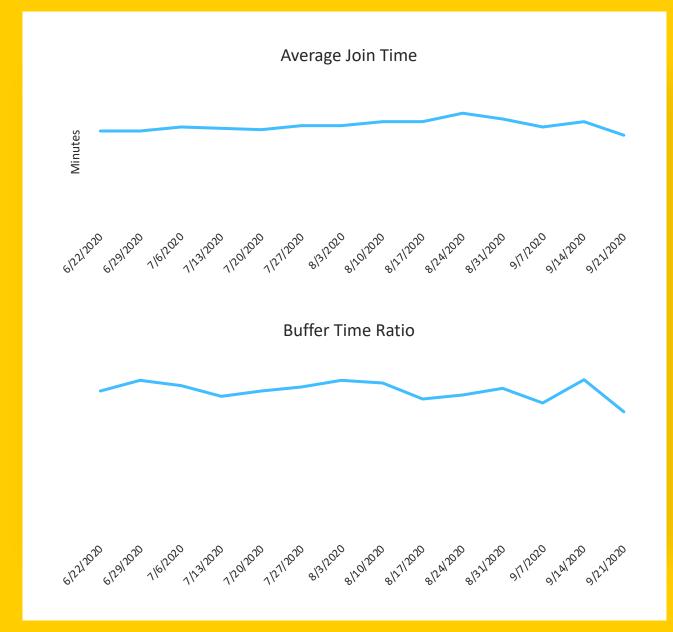




Join time and buffer ratio have also both decreased from pre-migration.

Comparing the week of Sept 20 to July, average join time has fallen 10% and buffer time ratio decreased by 11%.

Viewers will spend less time waiting for media to play than before the migration.





Despite increase in live webcasts in last two weeks, buffer ratio is back down

Live webcast participants will experience the lower buffer rates they expect

Even though the week of September 14 featured more live events, the buffer ratio was the lowest in months.





What do all these graphs actually mean?

#### Traffic is up

Video usage has grown enormously, and we expect it to continue to climb before it levels off.

### There are still a few hiccups

There have been a few smaller outages in the past weeks, but overall, stability has been restored.

#### But the worst is over

The couple of weeks following the migration were deeply unpleasant. We did not support you the way you rightfully expect. But it's over now.

### Now we'll all reap the benefits

Despite usage rates continuing to climb, in the last two weeks we've seen error rates returning to the same levels as, and in some cases below, what we saw premigration. This is part of the expected benefits we moved for in the first place. While it's still early, the indicators are trending positively for better service overall going forward, even if usage continues to climb.



## **Moving Forward**



## Where are we now, and what's coming?



- The system is stable, and most issues have been resolved.
- Our services have been running on AWS solely for almost four weeks and the system is handling the increased load nicely. We are monitoring upload, transcoding, and playback closely to ensure further optimizations are put in place, should the need arise.
- Our KPIs and customer reports indicate that we are back to normal.

### Next Steps

- Moving forward, we will continue to monitor the system, and in parallel we will finalize the architecture modernization, complete the storage copy from the legacy data centers to AWS, and ultimately decommission our data centers.
- Major planned milestones:
  - Complete content migration from legacy data centers to AWS
  - Decommission Data Centers
- All upcoming changes will be clearly communicated in advance, before updates are made



# What have we learned?

### Communication

Our biggest misstep was in our failure to adequately communicate first our plans, and then the status of the migration in the first few days after it occurred. While the decisions we made were absolutely necessary, and some of the difficulties unforeseen, we should have kept you in the loop better. We're deeply sorry.

In the future, we commit to being clearer from the beginning, both to administrators of Kaltura accounts and also to your end users.

#### Next Time

All future steps will be performed with clear planning and communication, and with mitigation and redundancy plans set in place.



### Conclusions

We understand the migration project was painful, and impacted you and your end users severely, and for that we sincerely apologize.

We are currently conducting a stringent internal review and will use this as a learning opportunity to do better next time.

During the coming weeks we will continue to extend our customer care teams in order to reduce the ticket backlog that has developed over the past few weeks and get back to our regular service levels quickly.

As we are now serving our video solutions from AWS, we expect you to quickly experience a more reliable service, that will be even further enhanced in the coming months.

