Global Windows Azure Bootcamp 2013

World Record World Wide Community Event

Maarten Balliauw Windows Azure MVP maarten@maartenballiauw.be @maartenballiauw
Magnus Mårtensson Windows Azure MVP magnus@magnusmartensson.com @noopman
Alan Smith Windows Azure MVP cloudcasts.net@gmail.com @alansmith
Michael Wood Windows Azure MVP mvwood@mvwood.com @mikewo

Executive Summary

On April 27, 2013, the world witnessed a unique community event: the Global Windows Azure Bootcamp http://globalwindowsazure.azurewebsites.net (GWAB).

At its heart this event is a local one day Windows Azure Community event. At each location, organized by local community leaders and Windows Azure enthusiasts, the event serves to benefit the local community members and to teach essential Windows Azure skills and know how. The event is a mix of sessions and labs based on the Windows Azure Training Kit.

Globally this event ran at 94 locations in 38 countries on the same day. From the first hour in the starting time-zone, Sydney/Melbourne Australia, to the last hour in the ending time-zone, San Diego, San Francisco and Redmond US, the event ran for 28 hours. Over 250 organizers worldwide received around 6,000 attendees. While the events were led by volunteers there were also eleven global sponsors who helped provide software, trials and giveaways, along with a host of local sponsors that helped support the event.

During the event a joint Render Farm Lab was conducted where each attendee at each location could join his/her deployment of Windows Azure Worker Role Instances to a global pool of video rendering CPUs. At one point during the event when many of the Asian deployments were still running and the European ones peaked the farm ran nearly 5 000 cores which is equivalent to over 8000 GHz and 8.5 TB of memory. Rendering over eight compute years during 30 hours this event surpassed the first Toy Story film by Pixar in render capacity.

Introduction

Early 2013, a group of Windows Azure MVP's had the idea to host a Windows Azure Bootcamp on several locations throughout Europe at the same time. The small group quickly settled on the basics of the event; the format, the date and the global hashtag #GlobalWindowsAzure. Then we went and made it BIG! At the Most Valuable Professional Summit 2013 the group spread the word about the event to several audiences. One such audience was the Big Room presentation by Scott Guthrie about the state of Windows Azure. Already at this time the event was closing on 50 locations worldwide.

Word of the event was also spread to the Windows Azure MVP and the Windows Azure Insiders Distribution Lists fueling the event into a frenzy. (The Windows Azure Sharks – with frickin lazers – smelled blood in the water – everyone wanted to join.) We were simply amazed at how many locations got added in Brazil, India and Nepal (we even had a location in Lumbini – one of the claimed birth places of Buddha and really close to the clouds!) as well as some very small locations we had never dreamt about adding like Mauritius. We reached to China which was also very cool considering the new data centers in mainland China had not been publicly announced.

Global Sponsorship

Even though the volunteers at the local events were key to the event, the great companies who stepped up to become Global Sponsors of the event helped round out the experience for the attendees with an unbelievable amount of giveaways, extended trials and services. There were eleven Global sponsors:

- AzureWatch - Paraleap offered an extended 30 day trial to the AzureWatch product with unlimited data collection to every attendee.

- Blue Syntax - Provided a license for the Cloud Backup Advanced Edition product for each event. (worth $700)

- Cerebrata - Offered a full license to the new Windows Azure Management Studio product to every attendee. (worth $295)

- Cloud Berry - Provided five licenses of their Cloud Berry Explorer and five licenses of their Cloud Berry Drive products to give away at each event location. (worth $40 per license)

- Inner Workings - Offered a 90 day free trial of their online learning system for every attendee.

- JetBrains - Provided a license of one of their many great products to raffle away at each event. (worth ~$300 per location)

- Microsoft - Provided financial support for the US based events, as well as logistical support for an online meeting for the Global Event staff.

- MyGet - Offered every attendee a one month starter edition as well providing a one year subscription to be given away at each event location. (annual pass worth $84)

- PluralSight - Offered every attendee a seven day trial of their online learning system and also provided one annual subscription to their service to be raffled away at each location. (annual subscription worth $299)

- Telerik- Provided one DevCraft Complete (all their products) package to give away at each location. (worth $1,499 per location)

- Zudio - Offered a three month free trial for the online Windows Azure Storage exploration service.

Many of the single licenses that were given away were tracked by the Global team so that the sponsors could get a handful of updates. The licenses and codes that were provided to all attendees could not be tracked by the Global team, but to the best of our calculations the amount of software potentially given away if all the attendees redeemed the offers, was in excess of $1.8 million USD / €1.4 million EUR.

In addition to the Global Sponsors, many of the events also reached out to local sponsors specific for their event. Local sponsors helped provide a variety of support to their events, such as facilities, financial support for catering and additional giveaways.

Locations and organizers

Here is a complete listing of all of the countries in GWAB:

- Addison, Dallas, TX, US
- Ahmedabad, Gujarat, India
- Atlanta, GA, US
- Bangalore, Bengaluru, India
- Baton Rouge, Louisiana, US
- Beijing, China
- Berlin, Germany
- Biratnagar, Nepal
- Birgunj, Nepal
- Blumenau, Santa Catarina
- Boca Raton, FL, US
- Bogota, Colombia
- Boston, US
- Bradford, England
- Brasília/GO, Brasil
- Brussels, Belgium

- Bucarest, Romania
- Buenos Aires, Argentina
- Calgary, Canada
- Campo Grande, Brazil
- Charlotte, NC, US
- Chicago, IL, US
- Chitwan, Nepal
- Cluj-Napoca, Romania
- Coimbatore, Tamilnadu, India
- Columbus, OH, US
- Copenhagen, Denmark
- Curitiba, Brazil
- Dehli, India
- Denver, USA
- Detroit, MI, USA
- Dublin, Ireland
- Espoo, Finland
- Fortaleza, Brazil

- Frankfurt am Main, Germany
- Geneva, Switzerland
- Goiânia, Brazil
- Gothenburg, Sweden
- Hampton Roads, VA, USA
- Hong Kong
- Houston, US
- Hyderabad, India
- Istanbul, Turkey
- Jakarta, Indonesia
- Kairo, Egypt
- Kathmandu, Nepal
- Kirkland, Seattle, US
- Knoxville, TN, USA
- Kochi, Kerala, India
- Kolkata, India
- Ljubljana, Slovenia
- Londrina, Brazil

- Lumbini, Nepal
- Malta
- Manchester, UK
- Manila, Philippines
- Mauritius
- Melbourne, Australia
- Montreal, Canada
- Mumbai, India
- Namakkal, India (private event)
- Nashville, TN, USA
- New York, NY
- Nigeria, Africa
- Niš, Serbia
- Oradea, Romania
- Oslo, Norway
- Paris, France
- Perth, Australia
- Phoenix, AZ
- Piracicaba, São Paulo, Brazil
- Pune, India
- Reston, VA, USA
- Rio de Janeiro, Brazil
- Rochester, NY, US
- Romania, Timisoara
- San Diego, US
- San Francisco, CA, US
- Sao Paulo, Sao Paulo, Brazil
- Shoreditch, London, UK
- Singapore
- South-Korea
- Stockholm, Sweden
- Sydney, Australia
- Taipei, Taiwan
- Tokyo, Japan
- Toronto, Canada
- Veenendaal, The Netherlands
- Victoria, London, UK
- Vienna, Austria
- Vitória, Espírito Santo, Brazil
- Wroclaw, Poland
- Yverdon, Switzerland

The Global Joint Render farm Lab

One of the things that was discussed at the MVP summit was the idea of having some kind of lab, or project that all the attendees could participate in. This would really help to drive the community spirit and connect the groups in different regions. It would also help to make the event truly global, by having participants around the world cooperating to achieve one goal. As Alan Smith had a worker role animation rendering lab from his Windows Azure training course ready to go, he suggested it would make a great lab for the Global Windows Azure Bootcamp. It should be fairly easy to convert the lab to work with the different locations working as teams, and create a website that would display the scores. It would be great fun to have all the different countries and locations competing with each other to render the most animation frames. The challenge would be to ensure that the application would scale to a global level and be able to handle the load that the attendees would place on it.

The lab used a Microsoft Kinect controller to capture depth data of attendees moving in front of the sensor, and then upload the depth images to Windows Azure and initiate a job to use the data to render a 3D ray-traced animation.

An animation would then be rendered using worker roles deployed by attendees at the different locations. The animation would then be published on a website using Windows Azure Media Services.
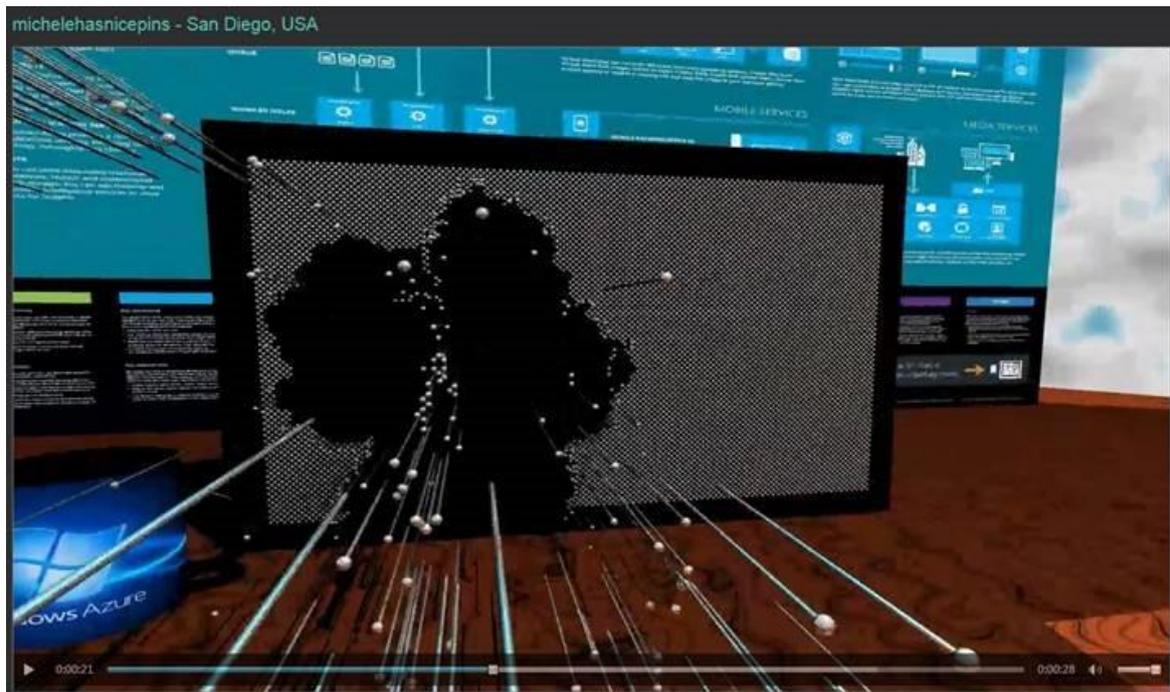

The render farm would capture rendering statistics for each attendee and display the results grouped by country and location. In order to introduce a competition element into the lab the countries and locations would be ordered based on which location had rendered the most animation frames.

About 750 attendees from 50 locations in 22 countries took part in the lab. During the event a total of 9904 worker role instances were started, with over 4,000 instances running concurrently for the second half of the event. 724,059 3D ray traced animation frames were rendered with a total render

time of 4 years 184 days 2 hours and 46 minutes. The overall compute time used by the 9904 worker roles was almost 7 years.

The Global Render Lab website received 3,718 unique visits, with 40,022 page views during the event. At times there were over 100 simultaneous visitors on the site. The traffic on the website was sustained over the day with over 5,000 page views per hour at its peak. The website was hosted on a single small reserved instance in Windows Azure Websites, with the ASP.NET cache being used to cache the result sets form the queries to the Windows Azure SQL Database.
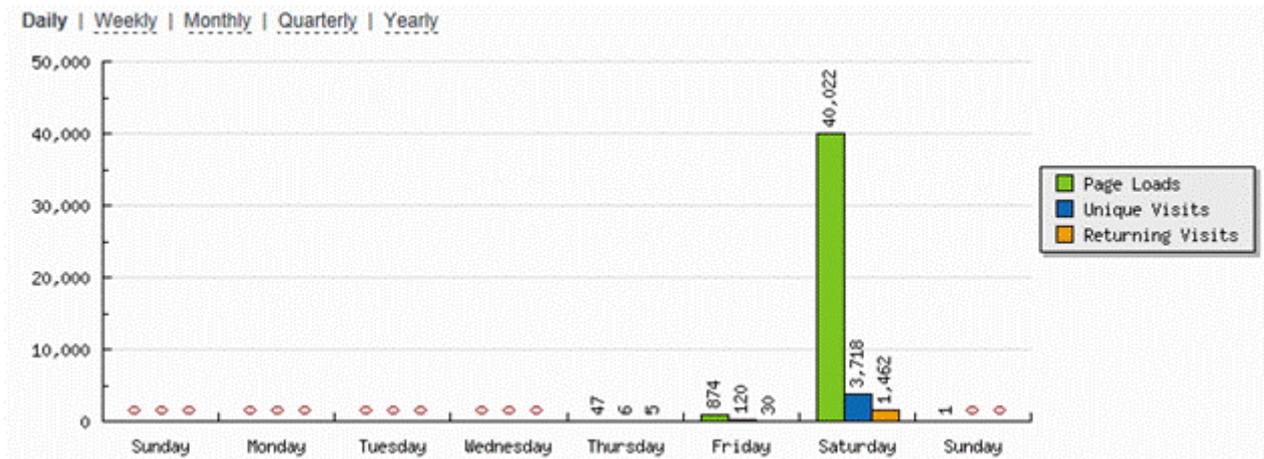
228 animations were published to the website using Windows Azure Media Services. The peak inbound data was 6.57 GB per hour, and the maximum encoding job queue depth reached 43 jobs. The worker roles used 4 storage accounts for animating, rendering, and encoding and media storage. The rendering storage account peaked at 2,105,873 queue requests per hour, which is an average of 585 requests per second.

The peak for blob storage was 415,435 requests per hour, which is an average of 115 requests per second.

Challenges

The aim of the lab was to make something that every student could participate in. We originally anticipated that we would have about 10 events, with an average of 50 people at each event, so we would have a maximum of 500 participants. As the event drew nearer we realized that we had been very conservative in our estimates, the event would be ten times larger than we originally planned, with close to 100 events and over 7,000 attendees.

The challenge for when creating the lab was to make something that could scale to tens of thousands of worker role instances if required. What made this even more challenging was that there would be no way to test this scalability before the event, and we had no control over all the instances that were running, as they would be deployed by attendees in different locations around the world. The lab would last for 26 hours, starting in Sydney and Melbourne Australia, and ending in San Diego California, meaning if we were going to be monitoring the lab over the event, we were not going to get much sleep.

Another potential issue with the event being a lot more popular than we expected was the load that it would place on Windows Azure. As I was hosting the storage services in the North Europe datacenter, the attendees would be deploying there worker roles there. We asked the Azure team if there would be any problems if the bootcamp attendees tried to create over 10,000 worker roles in one data center, and were assured that it would not be an issue.

The students would have a deployment package that they could deploy to Windows Azure using their own subscriptions. The events would also be able to use a Windows application and a Kinect controller to create and upload animations that would be processed by the global render farm. There is a webcast with an overview of the lab here.

## Running the Global Render Lab

The event kicked off in Sydney and Melbourne Australia on the morning of Saturday 27th April. In Sweden it was midnight, and I was at home monitoring the progress. The students would hopefully start deploring the worker roles early on, so I could see that everything was running smoothly and then get some sleep. To monitor the render lab I added code to the worker roles to send messages to a Windows Azure Storage queue and I used a C# console application that would receive the messages. This meant I would receive notifications when worker roles started, stopped, animations were completed, and also any exceptions that were thrown by worker roles. I could keep track of the thousands of worker roles that were running using a simple C# console application. I even used Console.Beep() so that I would know when things were happening if I was not set ay my PC.
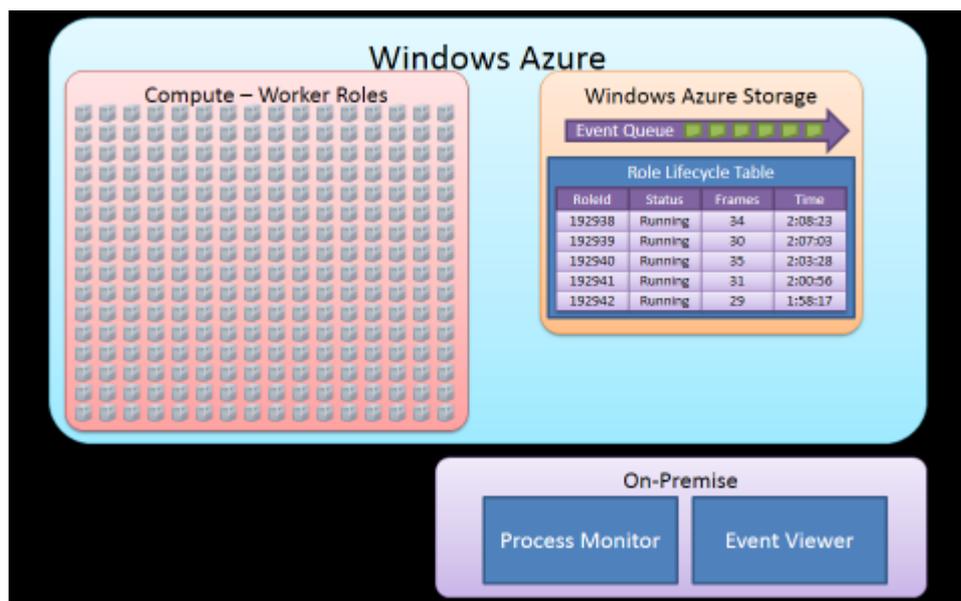
At 01:14 Swedish time, Alex Thomas at the Melbourne event in Australia started the first worker role instance, closely followed by other attendees at that event. A total of 93 worker role instances were

created at the Melbourne event, which rendered almost 9,000 frames of animation. At 04:00 on Saturday morning the lab was running smoothly, and so I decided to get a few hours sleep before the events in Europe started.

I woke up at 07:00 and some of the Eastern Europe events, and events in India had started. Things were still running fine, and we had a few hundred instances running. The event in Stockholm that I was running started at 10:00 and I got there early to open up and started the event with a short presentation about the Global Render Lab. Robert Folkesson and Chris Klug did a fantastic job delivering sessions and assisting the students with labs, whilst I spent most of the event monitoring the Render lab. Germany, Belgium, Denmark, UK and The Netherlands really got into the spirit of the lab, with Germany creating over 1,200 worker roles in total.

Active Worker Roles
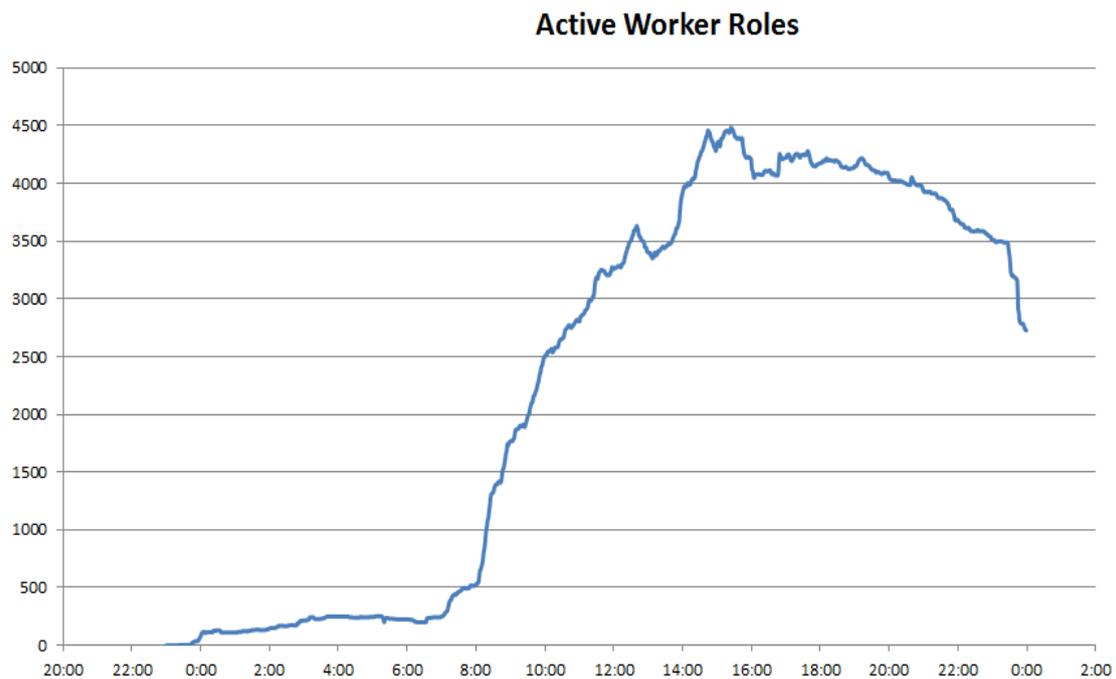
At 10:30 central European time we had over 1,000 running worker roles, and by 11:30 over 2,000. By 16:00 we had over 4,000 instance running, and this was maintained for the rest of the event as attendees in Europe deleted their deployments and attendees in the USA deployed ad scaled up theirs. I had also included a "Sharks with Freakin Lasers" Easter egg in the animation creator that some of the attendees discovered.

All Countries

	Country	Frames	Render time
	USA	146536 frames	Render time: 333 days 0 hours 47 minutes.
	Germany	138689 frames	Render time: 312 days 9 hours 36 minutes.
	Belgium	97040 frames	Render time: 220 days 6 hours 14 minutes.
	Denmark	55458 frames	Render time: 125 days 5 hours 22 minutes.
	UK	33672 frames	Render time: 75 days 16 hours 45 minutes.
	The Netherlands	33425 frames	Render time: 75 days 23 hours 36 minutes.
	Norway	31742 frames	Render time: 71 days 11 hours 47 minutes.
	Brazil	26946 frames	Render time: 61 days 15 hours 53 minutes.
	Malta	24958 frames	Render time: 56 days 7 hours 2 minutes.
	Sweden	23985 frames	Render time: 54 days 6 hours 10 minutes.
	Poland	22925 frames	Render time: 51 days 22 hours 45 minutes.
	Switzerland	20819 frames	Render time: 46 days 16 hours 4 minutes.
	Canada	16794 frames	Render time: 37 days 17 hours 36 minutes.
	India	14815 frames	Render time: 33 days 9 hours 59 minutes.
	Romania	12377 frames	Render time: 28 days 15 hours 24 minutes.
	Australia	8996 frames	Render time: 23 days 8 hours 12 minutes.
	Serbia	6373 frames	Render time: 14 days 21 hours 15 minutes.
	Austria	2624 frames	Render time: 5 days 22 hours 56 minutes.
	Hong Kong	2566 frames	Render time: 7 days 13 hours 56 minutes.
	Slovenia	948 frames	Render time: 2 days 4 hours 22 minutes.
	Finland	694 frames	Render time: 1 day 14 hours 14 minutes.

By the time the events in Europe were closing, the events in the USA and Brazil had started. I got home from the Stockholm event at 17:00 and after some family time I was back monitoring the lab. USA had about 14 events completing in the render lab, and were trying to catch up with Germany. USA had a total of 2477 worker roles deployed during the event, compared to Germany's 1260, so by the end of the event they had taken first place in the countries, with Berlin taking first place in the locations.

All Locations

	Location	Country	Frames	Render time
	Berlin	Germany	93729 frames	Render time: 211 days 19 hours 25 minutes.
	Brussels	Belgium	93322 frames	Render time: 211 days 21 hours 39 minutes.
	Copenhagen	Denmark	55357 frames	Render time: 124 days 23 hours 57 minutes.
	Bad Homburg	Germany	44960 frames	Render time: 100 days 14 hours 10 minutes.
	SNVC Chesapeake, VA	USA	43857 frames	Render time: 102 days 15 hours 26 minutes.
	Veenendaal	The Netherlands	33425 frames	Render time: 75 days 23 hours 36 minutes.
	Oslo	Norway	31706 frames	Render time: 71 days 9 hours 57 minutes.
	Shoreditch	UK	28724 frames	Render time: 64 days 9 hours 9 minutes.
	Luqa	Malta	24958 frames	Render time: 56 days 7 hours 2 minutes.
	San Diego	USA	23283 frames	Render time: 51 days 13 hours 56 minutes.
	Wroclaw	Poland	22925 frames	Render time: 51 days 22 hours 45 minutes.
	Northern Virginia	USA	21466 frames	Render time: 48 days 3 hours 47 minutes.
	Yverdon	Switzerland	20819 frames	Render time: 46 days 16 hours 4 minutes.
	Atlanta	USA	19736 frames	Render time: 44 days 17 hours 33 minutes.
	Stockholm	Sweden	19459 frames	Render time: 44 days 3 hours 43 minutes.
	Toronto	Canada	16794 frames	Render time: 37 days 17 hours 36 minutes.
	Blumenau	Brazil	13235 frames	Render time: 30 days 19 hours 36 minutes.
	Oradea	Romania	11390 frames	Render time: 26 days 9 hours 31 minutes.
	Ahmedabad	India	9292 frames	Render time: 20 days 22 hours 56 minutes.
	Melbourne	Australia	8996 frames	Render time: 23 days 8 hours 12 minutes.
	Spring, TX	USA	8669 frames	Render time: 19 days 7 hours 2 minutes.
	Vitoria	Brazil	7551 frames	Render time: 16 days 19 hours 45 minutes.
	COLUMBUS	USA	7116 frames	Render time: 16 days 6 hours 22 minutes.
	Nis	Serbia	6373 frames	Render time: 14 days 21 hours 15 minutes.
	KnoxvilleTN	USA	5393 frames	Render time: 11 days 22 hours 14 minutes.

Issues Running the Lab

Two or three days before the event I was pretty sure that the Global Render Lab would be a failure, and was seriously considering cancelling the lab at the last minute. About three days before the event I hitting a lot of issues with reliability in Windows Azure Storage, I have not had time to diagnose exactly what caused these, but will hopefully include them in a later report. 12 hours before the event kicked off I hit a major potential show-stopper in my code but with help from to Maarten Balliauw I was able to resolve it quickly.

Thanks to the time invested by some of the event organizers during the testing phases of the lab I was able to detect a number of other issues that could have been potential show-stoppers on the day. The need to be able to deploy a new version if needed, and to put all the running worker roles into an idle

state was quickly identified, as was the need to be able to reduce the load on storage accounts by disable worker roles by country, location, attendee or specific role instance. I had no control over the deployment and deleting of the worker roles, but I needed some control over how they ran against the storage accounts.

A number of animations failed to be completed and got stuck in the render queue with a status of Encoding, this was mostly due to the way I had implemented the encoding process in the worker role, but also due to the way the students created and deleted deployments. Worker roles were being deleted throughout the event, sometimes at a rate of over 100 per minute, and this meant that some long-running tasks would fail to complete.

Lessons Learned

Overall it was felt that the lab was a great success. From the photos captured by the attendees who uploaded animations it looked like they were enjoying using the application. Many of the events took part in the lab, with some of them taking the competition aspects seriously. It would have been great to have more of the locations taking part, more effort could have been made to promote the lab and make sure that content was provided to attendees in their native languages.


On the whole the application stood up to the load that we placed on it. Some attendees had to wait a long time for their animations to be rendered and encoded. The job queue on the Media Services account indicates that things could have been improved there by increasing the capacity available there to reduce this time. There were a few reliability issues that meant that some animations never

got encoded, there is scope for improvement here. Also the range of different animations that could be selected and rendered form the depth data could be extended.

Social Media

We wanted to spread the word about our GWAB event to the World. Therefor we had a massive Social Media Presence. We had activities on Twitter, Facebook, Lanyrd, Jabbr.NET and Flickr.

On our event website, we had a lot of information about the event and provided live blogging from several locations. The following charts display unique visitors during the time of our event (charts showing Feb 20, 2013 - May 6, 2013). The day of the event our website almost had 26.000 unique visits, or more than 18 unique visitors every minute.
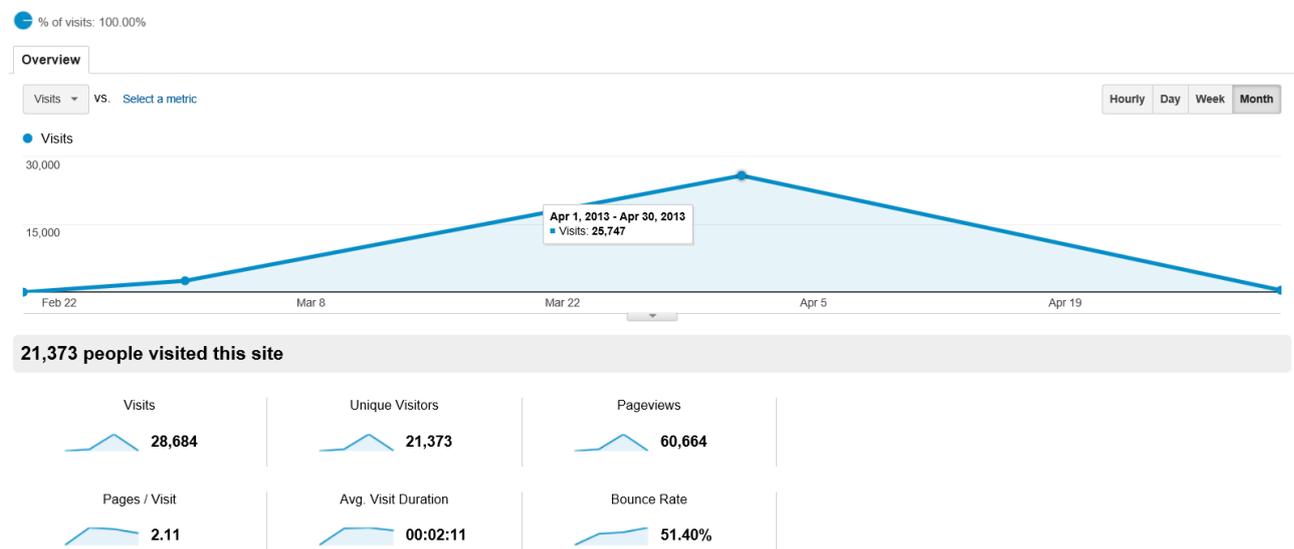
Twitter

On Twitter we used the hashtag #GlobalWindowsAzure. Although this tag is a bit long we felt it was important to use the full product name Windows Azure as part of the hashtag. Any search on "WindowsAzure" on Twitter would surface our event.

During the UK events time frame the hashtag was trending in the UK.

Facebook

On Facebook we created the page https://www.facebook.com/globalwindowsazure. Also the Brazilians created a group https://www.facebook.com/groups/GWABootcampBrasil.

Windows Azure on Facebook helped out by adding an "event" on their page and some nice graphics:

https://www.facebook.com/events/253510711459112

Lanyrd

On Lanyrd we created a GWAB event to keep track of all of the organizers and their sessions. This listing was manual and ended up not covering all of the people involved or all of the locations. 84 speakers and 49 sessions was nowhere near all of it. From this perspective admittedly this was not a complete success. The learning here is that this manual editing process just does not work or scale.
http://lanyrd.com/2013/globalwindowsazure

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http://lanyrd.com/2013/globalwindowsazure

Jabbr.NET

As a chat back channel for the event we had a room on Jabbr.NET
https://jabbr.net/#/rooms/GlobalWindowsAzure. In this room it was possible to ask questions and get answers as well as chat for fun with attendees from other locations.

Flickr

The Flickr group http://www.flickr.com/groups/globalwindowsazure was joined by 71 people who uploaded a total of 584 pictures.

Media

Lots of media all around the world reported about our event. Here are a few samples from the flood:
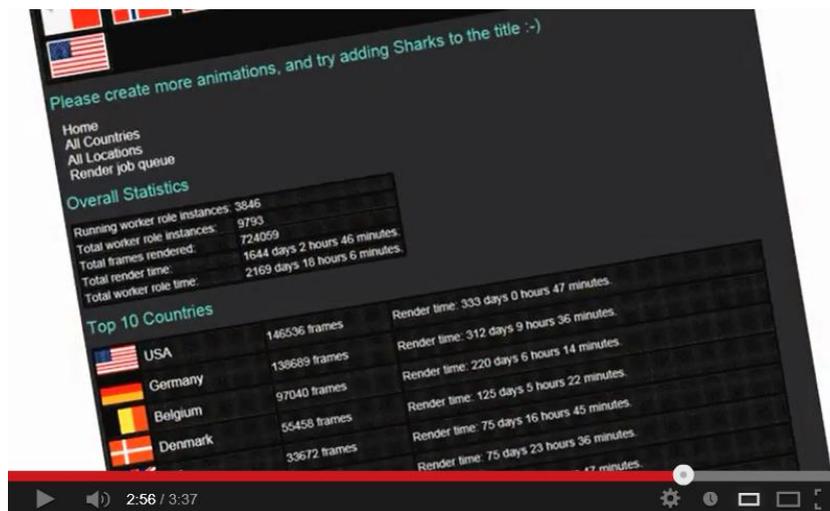
Sweden, Australia, India, Germany, Malta, Nepal.

Next time

The group is planning for a second Global Windows Azure Bootcamp to take place in the spring of 2014 which will of course break their own record!

Summary

Here is a peek into the action: The GWAB Aftermath Video

Without a doubt this event took on a life of its own and grew way beyond anything we had ever imagined when we started out. The tipping point was around 50 locations. When the growth speed peaked we added 15 locations in one week. Our very basic organization with an email list and an organizer Excel spread sheet in Magnus' SkyDrive just did not scale very well. We had to spend lots of time handling data for each locations and answering the same email questions over and over again. We can conclude that events on this scale require a web application that handles organizer membership and data as well as a forum style communications board.

Given the inherent online and connected nature of the Windows Azure Community this event worked really well. On the other hand we see no reason this type of global event, with a global social media presence, cannot be repeated for other Microsoft products. This could be the beginning of a new type of global community event. Also the communities can share the same basic technical platform.

The render farm lab became a wonderful glue to join the individual community events and make the attendees feel they were part of greatness. As such it served an invaluable purpose. That lab is now spent and next time something else must be used. Our idea is to prepare a Windows Azure Deployment which can be configured as last time with names of a sponsoring company. The attendees company can then donate compute time to one of the many research projects that exist online. For example, if we worked with a group like the World Community Grid - http://www.worldcommunitygrid.org/ - we could provide massive amounts of compute time to help accomplish humanitarian goals. Each sponsor will use their own Windows Azure account. This means no money will change hands direct from the sponsors to Microsoft. All the sponsor does is pay his Windows Azure bill as usual. Sponsoring companies can have their company name, logo and link displayed on the event site.

This event was phenomenal - and tiring! We are very grateful to have worked with the Greatest Technical Community in existence: The Windows Azure Community. We look forward to doing this again - bigger, bolder and even cooler!

Appendix A: Thanks to

A lot of great Windows Azure enthusiasts stepped up and got involved in Global Windows Azure Bootcamp. Hopefully the listings below do not miss out on any who should be named! We also got

input from all of the locations on names of people to thank. It is not possible to fully verify all of these names but we feel the fair way to do it is to list all who have been named.

Community Activists

So many community folks to thank! Everyone participated joyfully to make GWAB a very special event at each location. The stories we have heard from around the globe are amazing and bear witness to the greatness of this Cloud Community that is Windows Azure!

Abdallah Emad	Ashvini Shahane	Dan Stolts	Frank Arrigo
Abdel Rahman	Aviraj Ajgekar	Dan Wahlin	Frans Thamura
Magued	Aymeric Weinbach	Daniel Egan	Frederic Harper
Abhishek Sur	Ayodeji Adeleke	Daniel Mellegaard	Gareth Gauci
Aboluwarin Olaoluwa	Azza Eissa	Frost	Gaurav Mantri
David	Balaji, Basavaraj	Danny Grieve	Gaurav Sharma
Adnan Cartwright	Banji Olajire	Danny Mak	Guanjun Hao
Ahmed Abd El Zaher	Basavaraj	Danny Price	Gustavo Malheiros
Ajay khankhoje	Bill Wegerson	Darmawan Suandi	Guy Barrette
Alaghunila	Blake McNeil	Daron Yondem	Hagar Ibrahim
Alagunila	Bob Familiar	David Dong	Hammad Rajjoub
Alan Smith	Bob Hunt	David Giard	Hans Laubisch
Alastair Waddell	Bojan Vrhovnik	David Mackley	Harish Ranganathan
Alex Mang	Bostjan Strazar	David Makogon	Heriyadi Janwar
Alexander Singer	Brad Allen	David McGhee	Hernan Guzman
Alexandre Brisebois	Brendon McCarthy	David Paquette	Herve Roggero
Alexandru	Bret Stateham	Deepika	Hitesh Dhingra
Allen Bailochan	Brian Hitney	Dele Akinsade	Holger Diekhoff
Tuladhar	Brian Maier	Demola Morebise	Ibrahim Abdel Karim
Allison Lingerfelt	Brian Prince	Denis Kitchen	Ibukun
Amal Dev	Brian Sherwin	Dennis Mulder	Ilkay Ilknur
Amira Ahmed	Brian Thompson	Dennis Skrtic	Ira Bell
Amy Cheuk	Brittany Mundy	Derek Gabriel	Islam Zidan
Andre Baltieri	Bruce Johnson	Dhananjay Kumar	Jan Hentschel
Andrei Ignat	Bruce Troutman	Dikdik Fazzarudin	Jason Haley
Andres Fontan	Bruno Terkaly	Dinesh Kumar	Jason Wihardja
Andres Londoño	Carlos dos Santos	Dineshkumar	Jean-Luc Boucho
Andrew Howell	Carlos Oliveira	Don Jayasinghe	Jim Coxe
Andri Yadi	Casey Watson	Dr Vijay	Jim O'Neil
Andy Cross	Catalin Dit	Dr. B.K. Alese	Jithu Thomas
Andy Westgarth	Catalin Gheorghiu	Dr.S.Vijayaragavan	Joe Guadagno
Anoop Madhusudanan	Cavit Yantac	Edward Portelli	Joe Johnston
Anton Staykov	Chaitra Nagaraj	Emily Ocon	Joe Mayo
Antonio D'Ornellas	Chris Bowen	Eneko Vallecillo	Joe Reynolds
Archana	Chris Dufour	Eric Rohler	John Chang
Ariel Schapiro	Chris Hewitt	Eric ShangKuan	John Garland
Aries Triwahyudi	Chris Klug	Esteban Beltran	Johnny Halife
Arnaud Meslier	Chris Koenig	Eugene Chuvyrov	Jonathan Cassar
Arnie Locsin	Chris Weldon	Fabien Lavocat	Jonathan Rozenblit
Arun Kumar	Christian Longstaff	Faizal Wely	Jose Romaniello
Arunkumar Kumaresan	Claire Smyth	Fernando Correia	Juan Carlos Ruiz
Arunkumar Palanisamy	Clare Burgess	Fiona Fisher	Juan Guillermo
Arunraja Athiyappan	Damian Otway	Fober Folkesson	Carvajal
Ashwin	Damir Dobric	François Boucher	Juan Pablo Garcia

Juhani Vuorio
Julio Avellaneda
Julius Fenat
June Tabadero
Jung Joo-Myeong
Jürgen Mayrbäurl
Kamlesh Rao
Karl Ots
Karl Rissland
Karthick
Karthikeyan Anbarasan
Katherine Chen
Katrien De Graeve
Kaushal Bhavsar
Kim Dae-Woo
Kim Jong-Min
Kinda Lau
Kiran Khambete
Kris van der Mast
Krishna Nadiminti
Kristine Drier
Kristof Rennen
Kuppurasu
Lauri Kotilainen
Laxmikant Bhole
Lee Jin Ah
Lina Wu
Linda Hogg
Ljupco Grmaskoski
Lohith G N
Loryant Strant
Lucas Romao
Lukasz Gasior
Magnus Mårtensson
Mahesh Devjibhai
Dhola
Mahesh Krishnan
Mahesh Mitkari
Malte Lantin
Mandar Kulkarni
Marcel Meijer
Margarita Corpuz
Mariam Emad
Marius Zaharia
Mark Eisenberg
Mark O'Shea
Mark Rendle
Markus Eilers
Martin Abbott
Marwan Hamdy
Mary Perisic
Mathias Brandewinder

Matias Woloski
Mayur Tendulkar
Mayura Dolas
Michael Corpuz
Michael S. Collier
Michael Willett
Michael Wood
Michele Leroux
Bustamante
Mick Badran
Mickaël Mottet
Miguel Saez
Mihai Nadas
Mihai Tataran
Mike Martin
Mike Moles
Milica Stojanovic
Milorad Imbra
Ming Chung Chu
Mir Majeed
Mirosław Pragłowski
Mitch Denny
Mohamed Faizal
Mohamed Ghoneim
Mohamed Mohsen
Mohammed Ramees
Monish Darda
Moustafa Wahby
Nabjyoti Boruah
Nandhini
Nathan DeWitt
Neil Mackenzie
Nelson Johnson
Nevin Dong
Nick Trogh
Nico Wilhelm
Niraj Bhatt
Niraj Jee
Norman Sasono
Nuno Godinho
Oana Viciu
Ogundare D.
Aboluwarin
Oh Seong Mi
Olaf Loogman
Olaoluwa Elieseus
Oliver Michalski
Omkar Khair
Osama AbdEl Aziz
Panagiotis Kefalidis
Pascal Laurin
Patriek van Dorp

Paul Spiroski
Pavan S B
Pawel Lukasik
Per-Frode Pedersen
Petar Vucetin
Peter Kirchner
Petri Wilhelmsen
Phani Kondepudi
Pierre Arnaud
Pierre Couzy
Prabhjot Singh Bakshi
Pradeep Kandel
Praveen Nair
Rachel Hogan
Radu Ticiu
Radu Vunvulea
Rafael Ferreira dos
Santos
Rafael Leonhardt
Raghavendran
Rainer Stropek
Rajesh Agarwal
Ramees Mohammed
Raymond Wong
Reneata Chang
Renee Worley
Ricardo Villalobos
Richard Conway
Richard Fennell
Richard Nalezynski
Richard Qi
Richard Reukema
Rick G. Garibay
Rob Bramhall
Robert Folkesson
Robert Hogg
Roberto Alvarado
Robin Mattern
Robin Shahan
Robson Castilho
Rodrigo Kono
Rok Bermez
Rudy Setyo Purnomo
Ruitao Feng
Ryan Duclos
Ryan Lowdermilk
Sahas Lad
Salem Kosemani
Sam Vanhoutte
Samuel Loup
Sandra Marin
Sankarakrishnan

Sara Ward
Sarang Kulkarni
Saravana Kumar
Sarit Ghosh
Sarit Ghosh
Sasa Todorovic
Sascha Dittmann
Scott Simock
Sebastian Iacomuzzi
Senthil Kumar
Shady Atef
Shanatanu Soman
Shanavas Thayyullathil
Sherif Abbas
Sherif Hamdy
Shiju Varghese
Shina Oyetosho
Shravan Kumar
Shreyas, Kiran
Shri Swaroop
Siddharth Monani
Sigrid Vandeweghe
Simon Timms
Simran Chaudhry
Sinem Eylem Arslan
Sinisa Perovic
Sirar Salih
Sisley Lin
Sky Chang
So Young, Lee
Srinivasan Seshan
Stefano dos Santos
Stephen Bradley
Steve Maier
Steve Spencer
Sudhir Joseph
Sureshkumar
Surykant Lokhande
Suvitha
Swarnapriya
Tanmay Kapoor
Tim Rayburn
Tim Vergel de Dios
Tolu Joel
Tom Carter
Tomas Jansson
Tricia Almas
Tugberk Ugurlu
Udaiappa
Ramachandran
Uduebor Michael
Usman Mohammed

Vaishali Shah	Wely Lau	William Wong	Yemi Ajiboye
Walaa Atef	Victor Szalma	Vishnu Tiwari	Yves Goeleven
Valentina Milano	Victor Szalma	Vitor Meriat	Ziyan Xu
Valeria Ignatieva	Vikram Pendse	Xing Fang	Zoiner Tejada
Walter Novoa	Wilfried Woivré	Yanesh Tyagi	Zoli Herczeg
Wassim Hosenbux	William Tulloch	Yannick Labonne	Åsa Black

Microsoft Employees

Though we are hesitant to single out any individuals from the Microsoft group we cannot but mention a few names we know were key to helping the global administration team of GWAB to get everything squared away:

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