Day 1

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| 09:00 | Welcome and Logistics |
| 09:20 | Introduction to Windows Azure |
| 10:30 | Windows Azure Websites Lab \* |
| 11:30 | Windows Azure Virtual Machine Lab |
| 12:05 | Lunch and Group Discussions |
| 01:00 | Virtual Machine Applications Lab \* |
| 02:30 | Windows Azure Storage \* |
| 03:45 | Consuming Cloud Services using Service Bus Lab |
| 04:45 | Discussion |
| 05:15 | Day 1 Concludes |

**Day 2**

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| 09:00 | Recap for Day 1 |
| 09:15 | Use Scenarios and Design Patterns \* |
| 10:15 | Windows HPC Server 2012 Cluster \* |
| 11:30 | Linux cluster Lab |
| 12:00 | Lunch and discussions |
| 01:00 | Linux cluster Lab Continued \* |
| 02:00 | Excel and Data visualization \* |
| 03:10 | Big Data analytics using HDInsight, advanced topic SPARK/SHARK \* |
| 04:00 | Kafka and STORM interactive demo |
| 04:45 | Discussion |
| **05:15** | Day 2 concludes |

**Note: \* These sessions include a 10 or 15 min break at the end.**

**Prerequisite:**

* List of requisite software including get two browsers, Azure Explorer, Cygwin (optional).
* course content Pre-downloaded including Scripts, Data, and Code
* Instructions for installing CLI, Azure SDK on computer with pointers to technical papers.

**Agenda:**

1. 09:00 Welcome 20 minutes, accounts logistics.
2. 09:20 Introduction to Windows Azure:  [60 min] No more than 20 slides and a portal tour. Outline of Use Scenarios and Design Patterns for researchers (Day 1).
   1. VM: A Work environment in the cloud
   2. Manual workstation burst, R Matlab
   3. VM as a testing environment
   4. Blog Storage: Store and share your Data in the Cloud
   5. Use persistent queue and table to scale embarrassingly parallel workload
   6. Publish Simulations in the Cloud

10:20 break

1. 10:30 Windows Azure Website intro + Lab => short, perhaps 2 examples:  create a WordPress blog, deploy a simple Bing Map web App. [Lab 45 min]
2. 11:30 Windows Azure Virtual Machine
   1. Deploy the Windows Visual Studio VM.
   2. Class Linux VM with pre-installed tools, IPython notebook pre-configured, run command to start at port 8080 private public 443.   [Lab]  [0.5 hours to start copying VM from VM depot]
3. 12:00 Lunch and discussions
4. 01:00 VM lab continued.
   1. Run through data clustering, pandas, and other scientific examples [1 hour] Clustering, Pandas.
   2. Installing and running R and Demo Matlab **in the Windows VM.**
   3. Attach Disks exercise.

02:15 break

1. 02:30 Windows Azure Storage
   1. Basic Introduction
   2. Azure explorer, cerebarata tools.
   3. [Python] mostly. Reuse their existing IPython notebook to try out the storage Commands in Linux console CLI.
   4. Learn to use AzCopy (Windows VM).

03:30 break

1. 03:45 Understanding and consuming cloud services Weather demo (10 min), Blast demo.  <http://blaster.cloudapp.net/>
   1. Introduction to Cloud Services.
   2. Introduction to Service Bus Queues.
   3. Explain: How to take an existing binary exe, using persistent SB Queue, and Table storage for scale out.
   4. Using the existing Linux VM: Run a Python **Service Bus** client with Blast worker. The lab will ask students to join the class blast cluster by adding a service bus key, create a new topic and run python.exe worker.py.  Call Send () Receive () message. Then, submit jobs through the blaster.cloudapp.net portal.
2. 04:45 Conclusion and discussions.
3. 05:15 End of Day1.

Day 2:

1. 09:00 Recap for Day 1
2. 09:15 Use Scenarios and Design Patterns for Day 2
   1. Ask students about their typical scale out workload
   2. Scale out with HPC Server
   3. Data visualization
   4. Big Data
   5. Devices and data streaming
3. 10:00 Break
4. 10:15 **Windows** HPC Server 2012 Cluster in the Cloud with R and matlab.
5. 11:30 Lab of Deploying **Linux** IPython Cluster running R

12:00 Lunch and discussions

1. 01:00 Linux cluster Lab Continued
2. 01:45 break
3. 02:00 Data Analytics using Excel (demo from data market, azure, power tools) and Layerscape

03:00 Break

1. 03:15 Big Data analytics using HDInsight, Advanced topics: SPARK/SHARK
2. 04:00 Kafka and STORM interactive demo:  Have students look through Kafka code and run client from their VM to send messages to the big screen
3. 04:45 Conclusion and discussions