Azure-based Cloud FTP Server

Advanced Operating System – spring 2012

1. Overview

Windows Azure is an open and flexible cloud platform that enables you to quickly build, deploy and manage applications across a global network of Microsoft-managed datacenters. You can build applications using any language, tool or framework. And you can integrate your public cloud applications with your existing IT environment.

2. Project Description

In this project, you will explore the exciting Windows Azure platform with the development Azure-based FTP server. This FTP server should support the following operations:

- Connecting: accept connection from across a network;
- Listing: list current active connections;
- Upload: accept data/file transfer from across a network;
- Download: transfer data/file to a network destination;
- Quit: terminate the FTP connection.

You can support additional FTP commands as you like, and you will receive extra credits on every successful implementation for any additional service.

3. Project Specification

You should **provide an interface for configuring your FTP server**. The configuration should at least include user management and home directory setup. You can refer to the popular FTP server like FileZilla and ServeU for the interface design.

Once you finish and deploy your ftp server on Windows Azure, you should **develop a benchmark program to monitor the ftp server**. This benchmark program should provide real-time performance data using Azure's API. A list view interface is recommended to show the result. The captured information could contain but are not limited to processor time, memory size, machine name (virtual machine ID), threads, handles and so on. You should define which information to capture yourself and clearly state it in your final report.

Very important: **your ftp server should automatically adjust the number of application instances** according to (or based on) your benchmark results. A simple idea is to increase the number of instances when more users attempt to connect. So when processor time and memory size increases, your ftp server should automatically increase the number of application instances.

Please state your tuning strategy clearly in your final report and provide any formula that you may have to explain your idea.

C# is recommended for the project, although node.js, java and php is also accepted.

4. Group Policy

This project is a group work. Each group may have at most 3 students. It is important that each member

of the group contribute meaningfully to the project. Each group will have an opportunity to demonstrate its work online, and each member will have to speak about his/her part.

5 Important Dates

Due Date: May 31st.

Note: No late submission will be accepted and you should start the project as early as possible.

6 Project Submission Details

You should zip the following material and send it to sjtuos@hotmail.com. The zip file name should be the student IDs of the group members separated by underlines. For example, a valid zip file name may look like this: 12379020_12379021_12379022.

- Source codes which could be opened, compiled and deployed by MS Visual Studio
- A project report with the following information:
  - group information(Your name and student id should be provided)
  - a description on what you have done
  - a simple design overview of your ftp server
  - ftp commands your ftp server support
  - captured information of benchmark
  - tuning strategy
  - important screen shots
  - references

The report can be either Chinese or English. Whichever language you choose, the report must be fluent in composition, style, grammar, syntax, and semantics. Excessive amount of errors in any of the aforementioned areas are causes for negative credits.

7 Honor code

You may consult open papers, books, online references, or publicly available implementations for ideas and code that you may want to incorporate into your project, so long as you clearly cite your sources in your code and your write-up. However, under no circumstances may you look at another group's code or incorporate their code into your project.

8 Logistics

8.1 Useful links

- Developer Center of Windows Azure
- Windows Azure Training Course
- Cloud Developer Center on MSDN
- Suggested Resources for Cloud Computing with Windows Azure
- Azure Web seminars

8.2 Books

- Developing Applications for the Cloud on the Azure Platform
- Microsoft Windows Azure Development Cookbook
- Moving Applications to the Cloud on the Microsoft Azure Platform
- Programming Windows Azure