Proposal: CLaaS
Computer Labs as a Service

**Florida Atlantic University –
School of Urban and Regional Planning**

Hosted Virtual Lab Service

November 24, 2017

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1. Introduction

1.1 Purpose

Pursuant to discussions held in the Fall of 2017, Gazoo is pleased to provide Florida Atlantic University – School of Urban and Rural Planning (FAU – Urban Planning) a proposal for the innovative, CLaaS or Computer Labs as a Service.

Specifically, Gazoo is proposing to create, manage and host a full instance of CLaaS for FAU – Urban Planning for a period of one year with an option to extend on an annual basis.

This proposal addresses the following deliverables:

- **CLaaS Integration**
- **Gazoo Desktop Pool Management**
- **CLaaS Image Services**
- **Support & Customization Services**

1.2 Outline of Proposal

Section 2 describes the Gazoo services necessary to create a CLaaS solution and integrate the solution into FAU – Urban Planning. **Section 3** describes the methodology for managing the pool of Gazoo Desktops and provides default recommendations for configuring the dynamic capacity features. **Section 4** describes the efforts required to build and support Gazoo Desktop images as well as options for maintaining the desktop image. **Section 5** describes the support services included with the CLaaS service as well as the option for customization work outside of the standard support services.

2. CLaaS Integration

2.1 Overview of Effort

Gazoo will work with the customer to integrate the CLaaS Solution to support site-specific requirements including but not limited to: software licensing server access, student on-boarding process, and SSO integration. This effort will begin with a design session, where Gazoo will establish a Single Point of Contact (POC) for technical integration efforts with the customer.

Following the design meeting, Gazoo will establish a CLaaS solution within Amazon's AWS with high-availability and using core Gazoo infrastructure with customer-dedicated Gazoo Desktops as shown in the architecture diagram below.

CLaaS Current Architecture
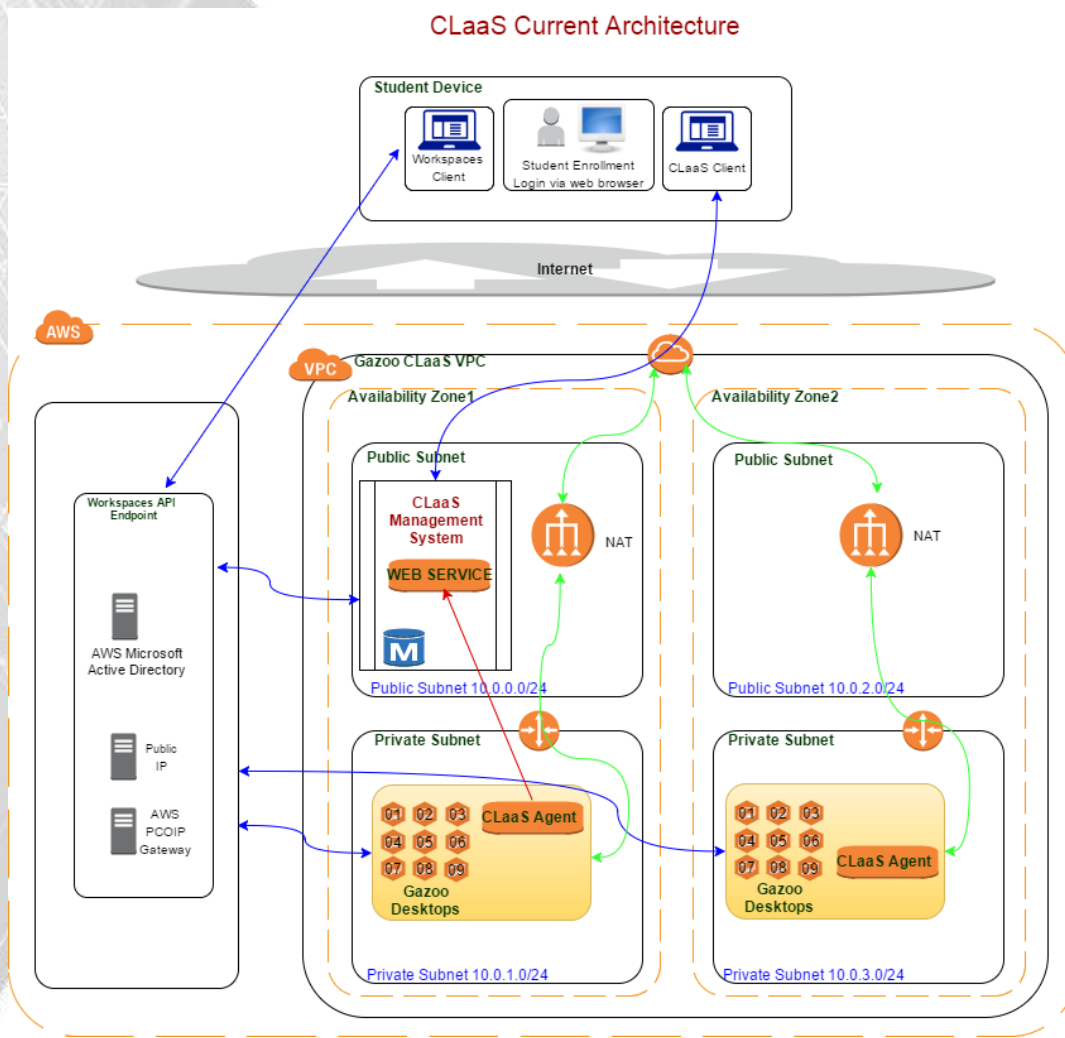
3. Gazoo Desktop Pool Management

3.1 Overview of Service

The Gazoo Desktop Pool management service provides our customers the ability to operate a virtual lab solution with extreme cost efficiency. Gazoo will predict the usage pattern of the student population based upon estimates in the following areas:

- **Adoption Percentage:** The percentage of students within the student body who will download the client. Students who download the client are called 'Active Users'
- **Consolidation Rate:** The number of 'Active Users' that can be supported by a single Gazoo Desktop. This number increases with the number of active users.
- **Annual Duty Cycle:** This is the effective activity rate of the active users that tends to change throughout the academic calendar.

These values will help to create a default and peak number of estimated users on a monthly basis. Gazoo will pre-build the estimated number of Gazoo Desktops each month and provide the ability to dynamically add Gazoo Desktops if the maximum allocated number of Desktops is reached within the month.

3.2 Dynamic Pool Allocations

Gazoo will provision two types of Gazoo Desktops each month based upon the expected usage. These estimates can be altered at any time based upon customer feedback. Once the pool of unused Gazoo Desktops falls to the 'insufficient level', Gazoo will begin building additional desktops to increase the capacity of the pool until a monthly maximum is reached. The 'insufficient level', the number of Gazoo Desktops added and the monthly maximum are all configurable. For the sake of this proposal, Gazoo would suggest the following configuration:

- **Insufficient Level:** When the available Gazoo Desktops reaches one (1).
- **Simultaneous Build:** When the pool needs to be expanded, build two (2) additional Gazoo Desktops.
- **Monthly Maximum:** Set to 32 in anticipation of future classroom-style use.

There are trade-offs in setting these thresholds and they can be optimized with a thorough understanding of student usage. Each 'build' cycle takes between 35-60 minutes and thus should be initiated before the final Gazoo Desktop is allocated.

4. CLaaS Image Services

4.1 Overview of Effort

Gazoo will build and maintain a software image of the customer's Gazoo Desktop so that it will seamlessly work within the CLaaS system. The image creation process follows the following steps:

- **Software Organization:** The customer will upload images of the software installation executables to a customer-specific account managed by Gazoo.
- **Software Licenses:** The customer will provide either a site license or instructions on how to connect the Gazoo Desktop to a software licensing server (note – VPN support is available for this connection)
- **Image Creation:** Gazoo will create a customer-specific 'golden image' that will be used for all Gazoo Desktops.
- **Review and Acceptance:** The customer is provided an opportunity to review the 'golden image' and either accept the product or request changes.
- **Maintenance:** Gazoo will perform updates and modifications of the image as directed.

An example image of the FAU – Urban Planning Gazoo Desktop is shown below:
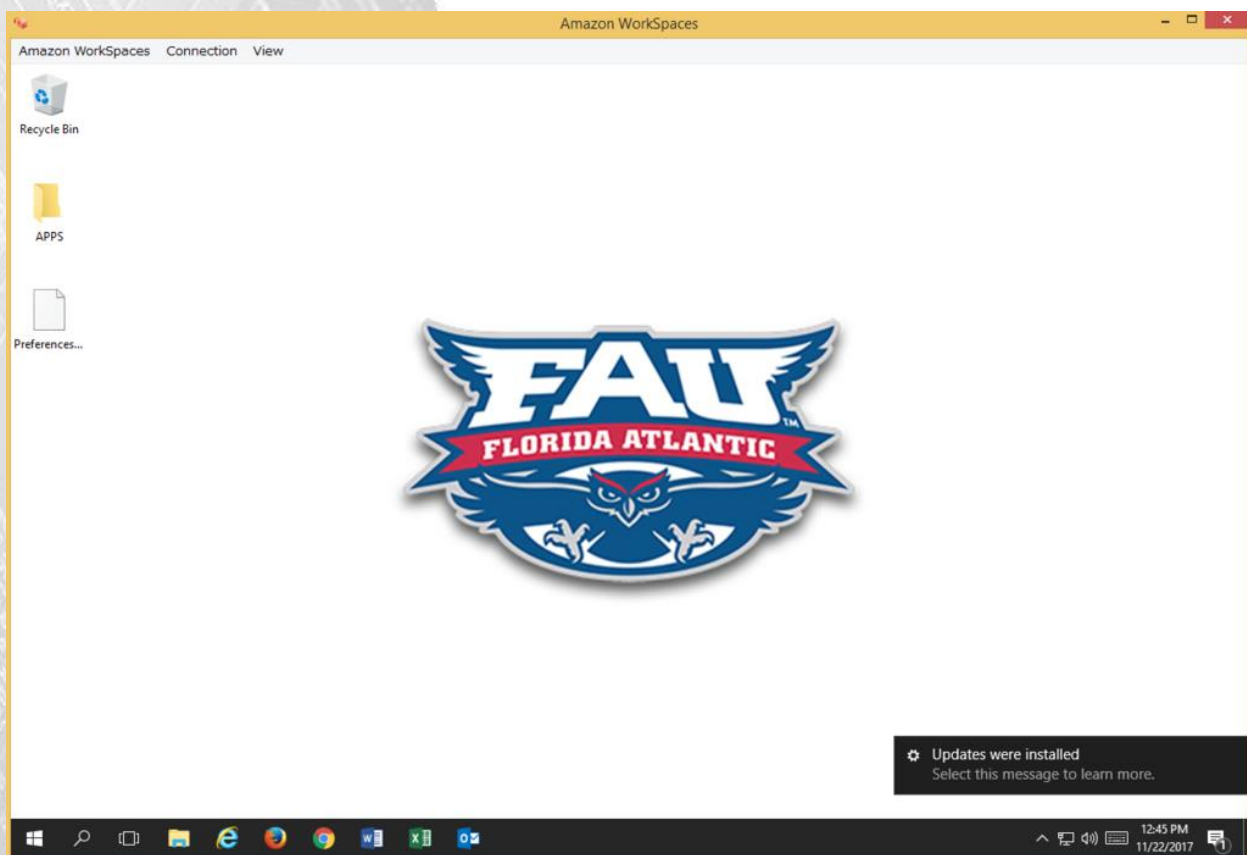
4.2 Fixed vs. Variable Image Support

Gazoo provides customers with the suggested option of purchasing an annual service agreement for unlimited image modifications. Alternatively, customers can forgo the annual service agreement and opt for an effort-based (hourly) maintenance service.

Each image maintained by Gazoo will be subject to this option. Therefore, if a customer wants to maintain two different types of labs and therefore requires two different images, each image will be independently subjected to the choice of an annual service agreement or effort-based service.

5. Support and Customization Services

5.1 Gazoo Desktop Support

Gazoo provides support services to ensure a smooth and consistent customer experience of the CLaaS solution. Support services are charged on an incremental basis and linked to the number of deployed Gazoo Desktops on any given month.

Specifically, Gazoo provides the following support:

- Student usage analysis and metric reporting for cost optimization
- Student on-boarding and trouble ticket resolution
- Image distribution and updates
- Desktop rebooting and trouble resolution
- Forensic analysis to assist with identifying inappropriate usage

5.2 Customization Services

In an effort to optimize our services, Gazoo provides customer specific enhancements on an effort basis with a residual annual support charge. When requested, Gazoo will work with the customer to engage in a customization design, build, test cycle as follows:

- **Design:** Gazoo will initiate a design session and document the feature requests and customization needed.
- **Quote:** A formal quote will be provided for the enhancement services
- **Implementation:** Gazoo will implement and submit for testing
- **Support:** All enhancements that require support will be billed at an annual rate of 1/10th the quoted price.

6. Pricing

Gazoo is pleased to offer FAU – Urban Planning a two-phased pricing structure with annual support and integration charges split across the lifetime of the contract and monthly usage charged on an as consumed basis. **The total estimated annual cost is $37,680.00 (not including the one-time Design and Integration Charge).**

6.1 Solution Integration

The solution integration charge covers all the initial setup configuration of the hosting platform, the computing systems and the customer specific routing and networking needs.

Design & Integration Charge	Charge	Projected P.O. Due Date
One-time charge	$25,000.00	TBD

6.2 Annual Software Services

Gazoo will provide support for one (or more) Gazoo Desktop images on an annual contract as shown below.

Image Support	Charge Per Image	Projected P.O. Due Date
Annual Charge	$3,750.00	TBD

6.3 Gazoo Desktop Service Estimate

Gazoo will provide desktops as agreed upon in the Desktop Pool Management section of this proposal unless otherwise altered following the beginning of the contract. Each desktop will be billed at the proposed monthly rate of $105/month per unit including support. This proposal assumes an annual workload of 40 hours per student (15/15/10 Fall, Spring, Other) The estimated annual charges per year are shown below.

Gazoo Desktops	Unit Rate Per Seat Used	Estimated Average Units per month	Estimated Annual Price
Standard CLaaS Workspace	$105.00	12	$15,750.00
Profile Unity Per Workspace	$10.00	12	$1,500.00
Graphic Workspace Hourly Charge	$1.95	667 hours	$15,600.00
Dedicated VPN & Network	$90	1	$1,080.00