

**MICHIGAN STATE**  
**UNIVERSITY**

# Project Plan

## Virtual Appliance Simulator

### The Capstone Experience

Team Whirlpool

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*From Students...  
...to Professionals*

# Project Overview

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- Simulate networked virtual appliances for Whirlpool
- To allow development of software without physical appliance
- Goal: Simulate any appliance, then multiple instances of it

# Functional Specifications

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- Simulates a virtual appliance for development and QA purposes
- Handle pre-existing specification files for appliances
- Interfaces with existing cloud applications
- Uses actual appliance APIs



# Design Specifications

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- Configurator reads appliance file and script files, set number of appliances
- Network interface of appliance is simulated
- Logs are generated in appropriate format
- Cloud calls in addition to scripted events can change state of appliance
- Appliance state is simulated in real time



# Screen Mockup: Configurator

## Whirlpool Virtual Appliance Simulator Configurator

Load Appliance

Appliance

Washing Machine

Quantity: 5

Load Scripts

script1.scr

script2.scr

Instances of Appliance



# Screen Mockup: Running

## Whirlpool Virtual Appliance Simulator Configurator

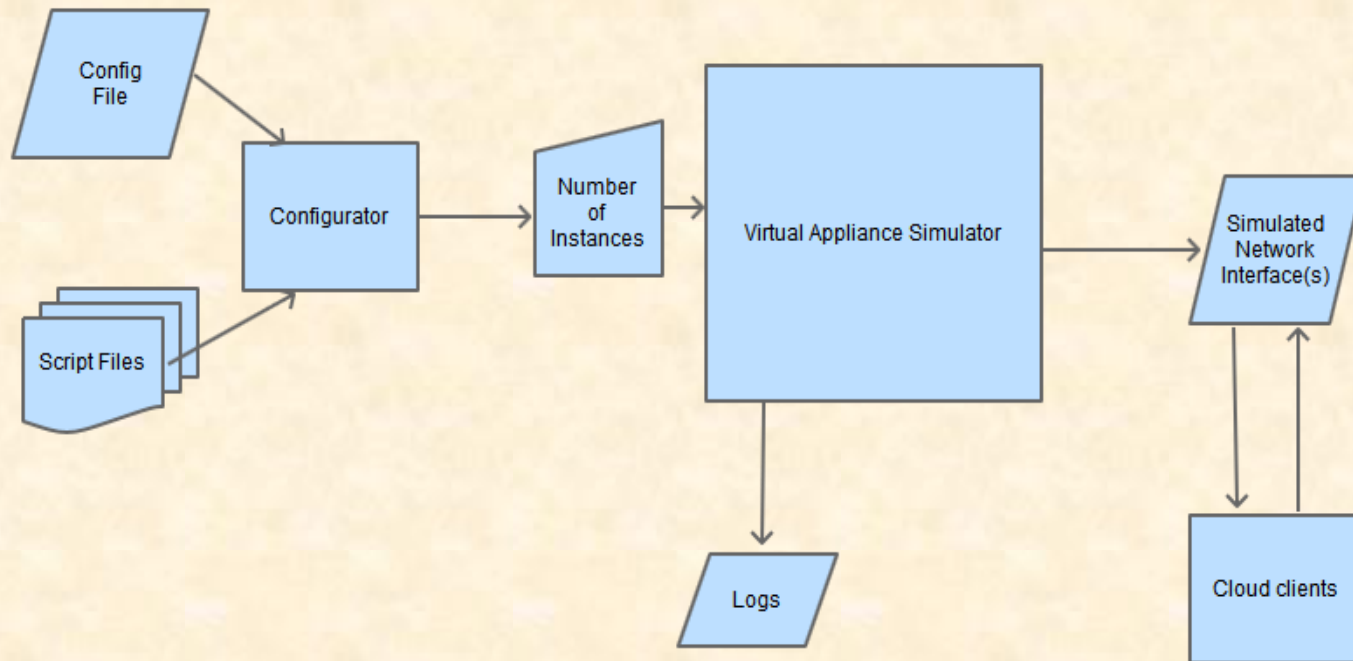
5 instances of appliance Washing Machine created.

5 instances of appliance Washing Machine running.

[Appliance Links](#)



# Flow Chart



# Technical Specifications

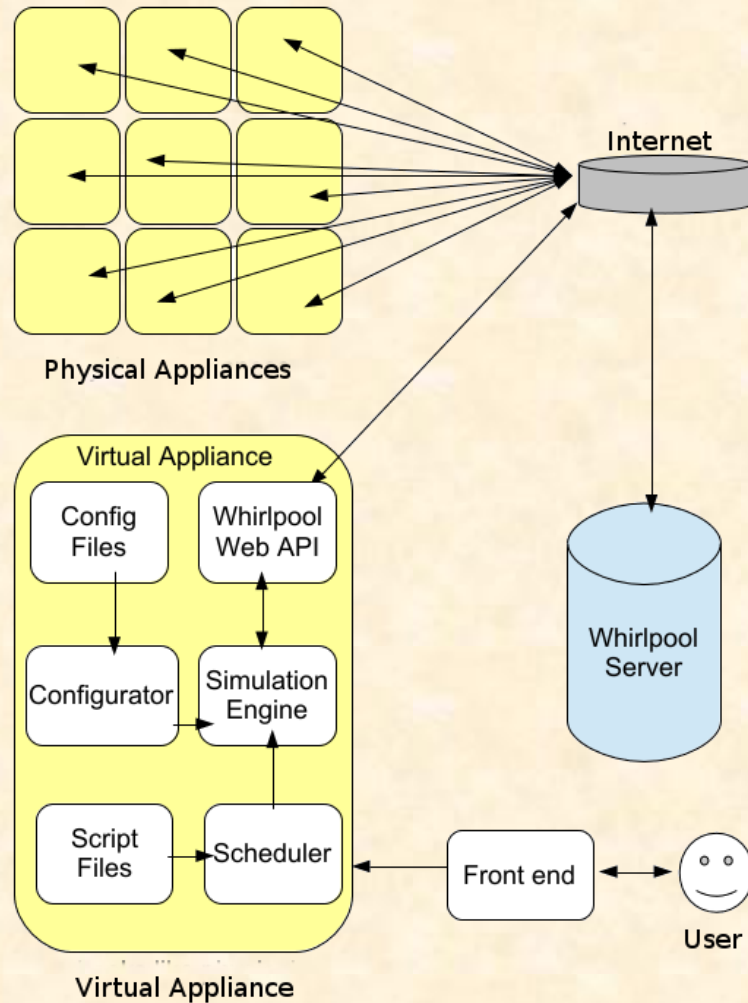
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- Developer can run simulator on development computer or server
- Machine simulates events happening as it would appear to the client programs in the cloud
- Design makes use of Factory Method pattern for virtual appliance creation
- Design makes use of Observer pattern for logging





# System Architecture



# System Components

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- Hardware Platforms
  - Whirlpool cloud
  - Developer/QA tester machines (unknown)
  - Server
- Software Platforms / Technologies
  - Ubuntu Linux (server and desktop)
  - Java
  - Netbeans



# Testing

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- Will be given SAIDs to test with
- Developer access to a sandbox for testing with cloud
- Will test on both server and regular computer
- Will test appliances of all types, be compatible to simulate any appliance
- Test with varying number of appliances



# Risks

- Lack of Java experience
  - Got book on Java, will read as needed
  - Online tutorials
- No existing simulation package
  - Start design early
- Large project scope
  - Break it into parts with the client; prioritize
- Current APIs in .Net
  - Search with Google for best way to translate

