VMS Multiple Client Login Simulator

A project report submitted

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Award of the Degree

of

Bachelor of Technology

in

Information Technology

by

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July 2016

I dedicate my thesis to my family,friends and faculty, who have supported and motivated me at all times.

DECLARATION

I hereby declare that this project work entitled **VMS Multiple Client Login Simulator** is original and has been carried out by me at Honeywell Technology Solutions as a part of my curriculum in the Department of Information and Communication Technology at Manipal Institute of Technology, Manipal, under the guidance of **Mr.Santhosh Kamath**, **Assistant Professor- Senior Scale**, Department of Information and Communication Technology,M.I.T., Manipal.No part of this work has been submitted for the award of a degree or diploma either to this University or to any other Universities.

Place: Manipal

Date :06-07-2016

Devendra Khemka

CERTIFICATE

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MANIPAL - 576 104, KARNATAKA, INDIA

This is to certify that the project titled **VMS Multiple Client Login Simulator** is a record of the bonafide project work done by **Devendra Khemka** (Reg. No. 120911556) at Honeywell Technology Solutions as a part of the curriculum in the Department of Information and Communication Technology at Manipal Institute of Technology, Manipal, independently under my guidance and supervision for the award of the Degree of Bachelor of Technology in Information Technology.

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ABSTRACT

The ACS (Automation and Control Solutions) team at Honeywell Technology Solutions works on simulating and recreating real life situations. Currently working on NVR sys- tems (Network Video Recording), this system is used for video surveillance and security measures.

The problem faced here was to test the NVR and VMS servers with heavy load so as to enable multiple users to connect and stream live feed onto their monitors for surveillance and security. Since it was physically impossible to connect thousands of cameras and monitors in our labs at HTS, we needed a simulator where the number of devices would not be a constraint and hence the servers could be tested with as many devices as required.

The objective of this project is to load test and crash test the servers by developing a simulator which would help the development and testing team to analyze the NVR system. The goal is to let the simulator run for months at a stretch and periodically increase the devices attached to it so as to continually ping the servers and obtain live feed and other information from it. The simulator needs to be running using minimal RAM and disk space so as to avoid crashing. The simulator is currently supporting over a hundred users with more than 28 cameras for each user, which sums up to over 2800 cameras, which would not have been possible given the physical constraints.

[**Social and professional topics**]: Surveillance–Corporate Surveillance
[**Applied computing**]: Computer forensics –Surveillance mechanisms,Evidence collection, storage and analysis;
[**Computer systems organization**]:Distributed Architectures–Client-server architectures
[**Computing methodologies**]:Modeling and simulation–Simulation Support Systems

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ABBREVIATIONS

VMS	:	Video Management System
NVR	:	Network Video Recorder
HTS	:	Honeywell Technology Solutions
CSV	:	Comma Separated Values

Chapter 1

Introduction

1.1 About Honeywell

Honeywell invents and manufactures technologies to address some of the worlds toughest challenges initiated by revolutionary macro trends in science, technology and society. A Fortune 100 company, we create solutions to improve the quality of life of people around the globe: generating clean, healthy energy and using it more efficiently. Increasing our safety and security. Enabling people around the world to connect, communicate, and collaborate. And equipping our customers to be even more productive. With more than 127,000 employees worldwide, including more than 22,000 engineers and scientists, we have an unrelenting commitment to quality and delivering results in everything we make and do.

1.2 Global Processes

Honeywell's ability to continually improve comes from successfully achieving two seemingly competing tasks at once productivity and growth. Our global enabler, HOS Gold focuses, on growing sales and becoming more productive, integrating all of our major internal process initiatives, such as the Honeywell Operating System (HOS), Velocity Product Development (VPD), Functional

Transformation (FT), Honeywell User Experience (HUE), Software, and Six Sigma, into a total business operating system. It is an end-to-end business management process focused on customers and markets, strategy development and execution, robust management, standardized work and cross-functional engagement.

1.3 What We Do

1.3.0.1 Aerospace Advancements

Honeywell Aerospace mechanical and electrical innovations are used today on virtually every commercial and defense aircraft platform. Our aerospace team invents and integrates thousands of products and services that deliver safe, efficient, productive and comfortable experiences worldwide.

1.3.0.2 Automation Smart Technology and Control Solutions

Families, businesses, and communities use Honeywell environmental controls, life safety, security, sensing, scanning, and mobility products, as well as building and process solutions in homes, buildings, industrial facilities, and public and private utilities around the world

1.3.0.3 Cutting-Edge Performance Materials and Technologies

Honeywell is a global leader in designing and creating high-purity, high-quality performance chemicals and materials. Our technologies can do everything from reducing emissions to stopping bullets. They enable the production of cleaner, more efficient fuels, increase capacity in oil refineries, speed drug discovery, and protect medicines

1.3.0.4 Efficient Transportation Systems

Honeywell Transportation Systems provides world-class technologies and solutions to automakers, their suppliers, and the public. Our technologies make passenger and commercial vehicles throughout the world perform better and more efficiently

1.4 About Honeywell Technology Solutions:

Founded in the mid-1990s, Honeywell Technology Solutions (HTS) is an integral technology development and engineering arm of Honeywell, providing technology, product and business solutions meeting global standards in quality, innovation and lifetime performance. HTS has centers in Bangalore, Hyderabad and Madurai in India, Shanghai and Beijing in China, and Brno in the Czech Republic.

HTS works on almost all Honeywell products right from conception to technology development and insertion, design, engineering, and delivery. With a workforce of more than 8,700 people with diverse engineering skills, HTS provides total solutions to businesses in the following areas:

1.4.1 Aerospace:

HTS develops and supports safety critical aerospace systems such as flight management systems, flight panel displays, environment control systems, and engine control systems for commercial and regional transportation, business and general aviation, and aerospace and defense.

1.4.2 Automation and Control Solutions:

HTS partners with Honeywell in the areas of life safety and security, building systems, industrial control, sensors and switches to make life simpler, more

comfortable, and efficient for people living and working in more than 100 million homes and five million buildings across the world.

1.4.3 Technology and New Product Development:

HTS collaborates with global Honeywell research labs and premier universities on mission-critical and cutting-edge technologies in areas like communications and controls, advanced data analytics, video and image processing, software systems and architectures for new product development, and value creation through augmentation of existing product lines.

The HTS India team focuses on SAP/enterprise-wide applications, business intelligence and analytics, infrastructure services, innovation, emerging technology proof of concepts/pilots, engineering IT, HITS apps/round-the-clock monitoring, IT-enabled new product/services development, HTS applications, and SAP support. The teams at HTS China and the Czech Republic extend support for their regional SAP deployments. The China team also extends application support in APAC, while the Czech Republic team delivers HITS services to partners.

The current focus is on continuing to mature centers of excellence, accelerating cross-collaboration with Engineering and Operations through Engineering and Ops IT solutions, cross-business synergy, support strategic in-sourcing and manage partners in non-core areas.

ITSS is a strategic asset to support Functional Transformation, Velocity Product Development, Honeywell Operating System and Business Transformation.

1.4.4 Turbo Technologies:

Honeywell Turbo Technologies is recognized around the world as one of the leading manufacturers of engine boosting systems for passenger cars and com-

mercial vehicles. Honeywell has a strong presence in India, serving customers in local markets by leveraging the Global Engineering Center and world class labs located in Bangalore, complementing state-of-the-art manufacturing and assembly plants in Pune with global teams also based in HTS China and HTS Czech Republic. HTS India is engaged in full product development life cycle on new generation turbochargers with a focus on understanding the voice of customer (VOC) to industrialization of products.

1.5 About Network Video Recorders:

A **network video recorder (NVR)** is a software program that records video in a digital format to a disk drive, USB flash drive, SD memory card or other mass storage device. An NVR contains no dedicated video capture hardware. However, the software is typically run on a dedicated device, usually with an embedded operating system. Alternatively, to help support increased functionality and serviceability, standard Linux and Windows operating systems are used with standard Intel processors and video management software. An NVR is typically deployed in an IP video surveillance system.

Network video recorders are distinct from digital video recorders (DVR) as their input is from a network rather than a direct connection to a video capture card or tuner. Video on a DVR is encoded and processed at the DVR, while video on an NVR is encoded and processed at the camera, then streamed to the NVR for storage or remote viewing] Hybrid NVR/DVR security systems exist which incorporate functions of both NVR and DVR; these are considered a form of NVR.

NVR home security systems are generally wireless, tend to be easy to set up, can be accessed through a web browser, and allow the user to be notified by email if an alarm is triggered.

1.6 About Video Management Systems (VMS)

A video management system, also known as video management software or a video management server, is a component of a security camera system that in general:

- Collects video from cameras and other sources
- Records / stores that video to a storage device
- Provides an interface to both view the live video, and access recorded video

A VMS can be the software component of a network video recorder and digital video recorder, though in general a VMS tends to be more sophisticated and provide more options and capabilities than a packaged NVR device.

Due to improvements in technology, it is necessary to make a distinction between a VMS and the built-in features of modern network based security cameras. Many modern network cameras offer internal capabilities to record and review video directly themselves via a web browser and without the use of a VMS. However a camera's built-in web interface is typically exclusive to the camera itself and does not normally provide a shared access capability across other network cameras. Optionally, a VMS may also provide additional features and capabilities. The extent of these capabilities may be divided across several product tiers, with the lower cost VMS products having fewer features.

1.6.1 Motion detection

Rather than continuously recording data, a VMS may also implement motion detection to reduce the amount of data to be recorded. In older analog security camera systems, the cameras were "dumb" devices only capable of producing

a video signal continuously, and any video signal processing had to be done by the recording VMS. With modern megapixel network cameras, the cameras are much more sophisticated. Motion detection can now be distributed, so that the cameras do motion detection themselves and only send video when motion is detected.

Alternately, motion detection can still also occur in the VMS. Some VMS do not have motion detection and rely exclusively on it being done in the camera. A difficulty with modern megapixel network cameras is the variety of standards and industry compliance with those standards. If a VMS does not have built-in motion detection, and a camera that is only accessible via ONVIF does not expose a motion control interface, and the camera manufacturer has not provided a custom API to the VMS authors, then motion detection will not be possible even if the camera is theoretically capable of it.

1.6.2 Distributed processing

- For a very large and complex security camera system, there may be too many cameras, too much network bandwidth, too much data to be analyzed, or too much storage required for a single server device to handle the workload.

- In this case the workload is divided across multiple server devices, each handling a slice of the overall workload.

- The VMS provides a single management interface allowing clients to access camera sources across all servers, making them appear to be a unified collection rather than isolated on multiple independent sources.

- This functionally may be reserved for the higher-end or more expensive VMS product options, and may not be available from a low-cost VMS.

1.6.3 Audio

A VMS can also be capable of recording audio from network cameras, and may in some cases provide two-way audio through a network camera, acting as an intercom. Typically this requires an external amplifier and speaker by the camera. Some network cameras include a built-in microphone, or may provide external audio I/O connections.

1.6.4 Alarm I/O

A VMS may provide the ability to monitor alarm inputs and act on them in some manner, including

- Sending alarm outputs to activate ancillary equipment such as lighting
- Beginning recording on one or more camera sources
- Sending an alert message to one or more people, via email, cellphone SMS, or over the Internet to a client application or mobile phone app.

Alarm inputs and outputs can be handled through separate interface components such as:

- Computer expansion cards
- Multipoint long-distance serial interfaces such as RS-422 or RS-485
- Directly integrated into network-based cameras

1.6.5 Pan tilt zoom control

A VMS may also provide the ability to remotely control pan-tilt-zoom (PTZ) cameras, which can be remotely rotated, titled, and zoomed, thereby allowing a single camera to monitor a very large area while also providing detailed views of specific areas of interest. PTZ itself can be implemented as:

- A real analog motion control, driving physical motors in the camera device
- A digital translation of a fixed camera view, to zoom in on the image and pan that close-up view around the zoomed image.
- Both the analog and digital PTZ can be combined together, potentially with a combined control system that is at first analog, but switches to digital once the optical zoom-in limit has been reached.

Digital PTZ has become very common as network cameras have increased in resolution to beyond 1080P. It is no longer possible to directly view all the pixels of some high resolution cameras even with a 4K computer monitor, and digital zooming is required to see the fine detail being captured by the camera.

Digital PTZ has the potential to reduce equipment maintenance and failure, by replacing a physically moving camera with a fixed very high resolution camera. Moving cameras have a tendency to fail over time due to wear of the drive motors, belts, and bearings. They may also be sensitive to temperature changes, and fail to function at temperature extremes. A fixed position camera removes these components, relying solely on digital translation of the high detail camera image.

Fixed-view fisheye cameras have a bowl-shaped 360-degree view. When mounted overhead pointing straight down, part of the viewed space appears sideways or upside-down on the VMS. For these cameras, the digital PTZ may also include a rotation feature to digitally rotate the view so that all zoomed-in viewed areas appear right-side-up.

1.6.6 License plate detection

A VMS can optionally provide the ability to locate license plates in its view and capture the plate information from the image, as a form of optical character recognition.

For fixed-location cameras, these numbers are stored in a database along with the time it was captured, and used in combination with many other cameras to create a geographical time plot for where plates are seen. License plate readers may be used to anonymously track the location of vehicles through the course of many days, to build a profile of vehicle usage and activity.

For mobile cameras, license plate detection works similarly as described above, though using GPS to log where a plate was seen and when. The VMS also provides on-the-fly data to monitor surrounding vehicles on the road, and look up the vehicle details such as registration or potential criminal activity.

1.6.7 Hybrid analog / digital recording

An organization can have a significant investment in older analog (NTSC/-PAL/SECAM) cameras and associated cabling and power infrastructure. The organization may decide to keep using the older cameras in some locations, rather than replace everything with new higher detail network cameras.

For example, a low-resolution analog camera in a little-used storeroom may suffice for the task, and not need the expense of a high detail digital camera and the infrastructure costs to install and use the new camera.

A hybrid system provides for a lower cost transition between analog and digital cameras, allowing the VMS to accept input from either video source type. A hybrid system may use internal multi-input capture cards or external video encoder devices.

1.6.8 Point of Sale integration

A VMS may offer the ability to be linked to the output of an electronic cash register, displaying the information printed on a sales receipt as text overlaying the camera image. This provides a visual record of the sale, and tracks mistakes or potential theft by employees.

1.6.9 Fisheye dewarping

As of 2016, this is still a very new component of video management systems and is not yet widely deployed or consistently implemented.

A fisheye camera has a special lens that typically has a 180 degree field of view and can see 360 degrees around the lens. When mounted flat on a ceiling, it is possible for a single fixed camera to see the entire space below it without moving. However the spherical view causes angular distortion of straight lines, giving objects a strange bulged and deformed appearance. Fisheye dewarping is a technique used by a VMS to take the output of a fisheye lens and mathematically correct the deformed image so that lines appear straight again, and objects look normal. The image is also typically rotated so that all portions of the view appear right-side-up.

There are several competing standards for dewarping. Some manufacturers such as Oncam and Panasonic have developed their own custom techniques, and need to provide decoding libraries to the VMS programmers to support their cameras.

Alternately a high performance dewarping method called Immervision has been developed, which also makes use of a special lens geometry to redistribute pixels in a more efficient manner. It has been licensed to camera manufacturers with fixed lens assembles, and can also be implemented on box-style cameras that can accept a special lens assembly compatible with Immervision.

Dewarping may not be present in all VMS, and even among VMS that do advertise the capability, some VMS may not be compatible with all cameras due to a lack of decoding libraries for specific camera models and manufacturers. It can also present a situation where dewarping works with a VMS, but due to a lack of in-camera motion detection support, the only option available is 24-hour recording or scheduled time-period recording.

Finally, dewarping is a computationally intensive task. Although multi-

ple views of a single fisheye camera are possible, the combined processing to dewarp multiple high resolution views can overload the viewer computer.

1.6.10 Single recorded stream, multiple views

A feature of some newer VMS is the capability to show multiple camera views from a single recorded stream. This utilizes digital PTZ of high megapixel cameras, and may also be referred to as client-side dewarping for fisheye cameras.

A single camera with a very wide or high resolution field of view is capable of covering two or more areas of interest. This single datastream is recorded only once, but then decoded multiple times by the client viewer software, zooming in on the separate areas of interest while still only utilizing one camera datastream.

This can significantly reduce data storage requirements, where two or more separate cameras would have been used previously. In the case of fisheye cameras, it is possible for one camera to replace 10 or more separate camera views, while only recording the one original panoramic fisheye view.

1.7 Problem Definition

The ACS (Automation and Control Solutions) team at Honeywell Technology Solutions works on simulating and recreating real life situations. Currently working on NVR systems (Network Video Recording), this system is used for video surveillance and security measures.

The problem faced here was to test the NVR and VMS servers with heavy load so as to enable multiple users to connect and stream live feed onto their monitors for surveillance and security. Since it was physically impossible to connect thousands of cameras and monitors in our labs at HTS, we needed a simulator where the number of devices would not be a constraint and hence

the servers could be tested with as many devices as required.

1.8 Objective

The objective of this project is to load test and crash test the servers by developing a simulator which would help the development and testing team to analyze the NVR system. The goal is to let the simulator run for months at a stretch and periodically increase the devices attached to it so as to continually ping the servers and obtain live feed and other information from it. The simulator needs to be running using minimal RAM and disk space so as to avoid crashing.

The simulator is currently supporting over a hundred users with more than 28 cameras for each user, which sums up to over 2800 cameras, which would not have been possible given the physical constraints.

1.9 Scope

There is immense scope for this kind of simulator after the initial development since we plan on adding all the intricate server features and details and even provide simultaneous video surveillance on the simulator itself. Implying, multiple users, can log into the server and see live feed from any of the cameras (as many cameras) simultaneously. From being a basic testing simulator, it could work as an interface software allowing users to directly log into the simulator and carry on with their processes and tests. Currently this simulator is being used inside Honeywell Technology Solutions, but can later be implemented in any video surveillance and security domains and scenarios.

1.10 Organization of Report

Rest of the report is organized as follows

Chapter 2 is a Tech Report that discusses the Methodology of the Project. Chapter 3 focuses on the Results Obtained. Chapter 4 describes the current scenario and the Future Scope of the project.

Chapter 2

Methodology and Tools:

2.1 Introduction

The software/tools used for this project:

- Visual Studio 2012
- Trinity Server
- Trinity Controller
- Trinity Recorder Group
- WebEx Recorder

Initially, the user logs into the simulator using the predefined credentials given by the administrator, and the cameras are then initialized and set according to a few parameters. The user then refreshes the Trinity server (along with the Trinity Controller and Recorder Group) and then the simulation begins. During the course of the simulation, the user can manually restart the server at any given point so as to create a more realistic recreation of the real time server and process.

Currently the simulator implements the following functionalities:

1. User details display

2. Simulates the number of recorders per user along with their status
3. Simulates the number of cameras per user
4. Simulates the real time status of each camera
5. Displays the details of External Input/ User List/ Site List
6. My Devices and Shared Devices list
7. Clip Information List
8. Salvo Part List
9. Bookmarks
10. Messages
11. Subscribed Alarms
12. Connected/Disconnected Status

The code for the above cannot be disclosed as per the Non Disclosure Agreement signed.

2.2 Basic Details

- The simulator has been designed to load test the trinity server as to how many users can simultaneously login and simulate the details for each user.
- The simulator displays the username, number of recorders for each user along with the status of each recorder (available/not available).
- The details for the number of cameras are also shown (available/not available).

- The cameras are pinged using threads and hence the latest details are updated on the C# form every 5 seconds (this time duration can be modified).

- The simulator also accesses the relays and alarms for each user (External and Internal Input), along with the total number of users (User list) , number of sites (site list) where the cameras are hosted.

- The MaxPro VMS software allows the administrator to generate salvo views and partition views for the users, which are nothing but customized panel viewing. The simulator gets the details for the number of such partition and salvos created.

- The MaxPro software allows the admin to add or remove shared devices between users, this detail is also showed on the simulator.

- Messages and bookmarks are user initiated data, which is triggered when a user manually adds a bookmark or sends a message on the software (MaxPro).

- Alarms is an integral part of the simulator, as whenever an event is triggered a corresponding alarm is triggered whose count is displayed on the simulator in real time (max of 5 second delay, this time can be modified).

- Lastly, the simulator shows the connected and disconnected state of every user to track whether a particular user is connected/disconnected from the trinity server.

Chapter 3

Result Screenshots

- Initially the administrator will login to the VMS server and add users to the database
- Once the credentials are correct, the simulator takes the admin to the database populate window, where the administrator adds user to the VMS server for the multiple client login.
- When the user addition is a success, the simulator throws a success message. Criteria for successful user addition: -User ID has to be unique; no two users on the same server can have the same user ID.
- When the users are added successfully, a CSV file is generated which contains the details for every user added for that session. The file contains the user ID, username, password, server details, controller server IP and the port numbers.
- Now the user chooses the corresponding CSV file from the local system and chooses the number of users he wants to simulate for that instance.
- This is the simulator screenshot for 11 users.
- Below is a snippet of the CSV file that is generated when the users are added to the VMS server using the simulator. Each user has a password,

controller and server IP and port address.

Figure 3.1: Login

Figure 3.2: User Database populator

Figure 3.3: Successful Addition of User

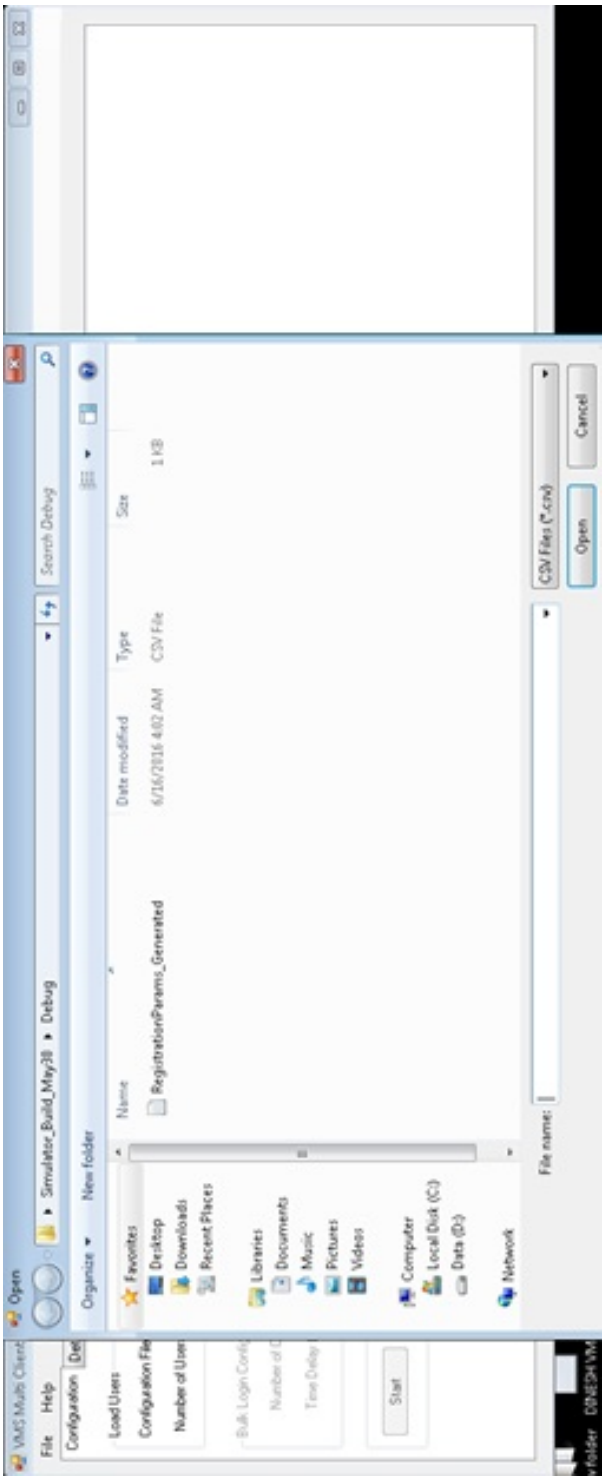

Figure 3.4: File Selection

Figure 3.5: Simulation Home Window

	UserName	Recoders	Recodes (Available/NAI)	Cameras	Camera (Available/NAI)	External Input/Output	UserList	SiteList	My Dev/ Shared Dev	Clip and Images Info	Salvo View /Partition List	BookMark	Message	Subscribe for Alarms	Connected / DisConnected
▶	admin	16	14/2	671	644/27	292/274	25	51	6/6	6	7/0	0	0	8469	1/0
	User500	16	14/2	671	644/27	292/274	25	51	0/6	6	7/0	0	0	8480	1/0
	User501	16	14/2	671	644/27	292/274	25	51	0/6	6	7/0	0	0	8476	1/0
	User502	16	14/2	671	644/27	292/274	25	51	0/6	6	7/0	0	0	8478	1/0
	User503	16	14/2	671	633/38	292/274	25	51	0/6	6	7/0	0	0	8497	1/0
	User504	16	14/2	671	644/27	292/274	25	51	0/6	6	7/0	0	0	8471	1/0
	User505	16	14/2	671	644/27	292/274	25	51	0/6	6	7/0	0	0	8474	1/0
	User506	16	14/2	671	644/27	292/274	25	51	0/6	6	7/0	0	0	8474	1/0
	User507	16	14/2	671	644/27	292/274	25	51	0/6	6	7/0	0	0	8478	1/0
	User508	16	14/2	671	633/38	292/274	25	51	0/6	6	7/0	0	0	8482	1/0
	User509	16	14/2	671	633/38	292/274	25	51	0/6	6	7/0	0	0	8484	1/0

Figure 3.6: Simulation Detailed Report

	A	B	C	D	E	F
1	USERNAME	PASSWORD	SERVERIPADDRESS	SERVERPORTNUMBER	CONTROLLERIPADDRESS	CONTROLLERPORTNUMBER
2	admin	trinity	10.78.174.243	20007	10.78.174.243	26026
3	User2	trinity	10.78.174.243	20007	10.78.174.243	26026
4	Test	trinity	10.78.174.243	20007	10.78.174.243	26026
5	User3	trinity	10.78.174.243	20007	10.78.174.243	26026
6	User4	trinity	10.78.174.243	20007	10.78.174.243	26026
7	User5	trinity	10.78.174.243	20007	10.78.174.243	26026
8	User6	trinity	10.78.174.243	20007	10.78.174.243	26026
9	User7	trinity	10.78.174.243	20007	10.78.174.243	26026
10	User8	trinity	10.78.174.243	20007	10.78.174.243	26026
11	User9	trinity	10.78.174.243	20007	10.78.174.243	26026
12	User10	trinity	10.78.174.243	20007	10.78.174.243	26026
13	User11	trinity	10.78.174.243	20007	10.78.174.243	26026
14	User12	trinity	10.78.174.243	20007	10.78.174.243	26026
15	User13	trinity	10.78.174.243	20007	10.78.174.243	26026
16	User14	trinity	10.78.174.243	20007	10.78.174.243	26026
17	User15	trinity	10.78.174.243	20007	10.78.174.243	26026
18	User16	trinity	10.78.174.243	20007	10.78.174.243	26026
19	User17	trinity	10.78.174.243	20007	10.78.174.243	26026
20	User18	trinity	10.78.174.243	20007	10.78.174.243	26026
21	User19	trinity	10.78.174.243	20007	10.78.174.243	26026
22	User20	trinity	10.78.174.243	20007	10.78.174.243	26026
23	User21	trinity	10.78.174.243	20007	10.78.174.243	26026
24	User22	trinity	10.78.174.243	20007	10.78.174.243	26026
25	User23	trinity	10.78.174.243	20007	10.78.174.243	26026

Figure 3.7: Registration Parameter CSV File

Chapter 4

Current Scenario and Future Scope

Currently, the simulator has been deployed and is being currently used by the VMS team (USA). No complaints regarding the memory management or performance has been raised yet, even though the simulator is still in the initial phases and is also being scrutinized by the testing team (India). Currently, each user in the simulator takes up to 80Mb of server space and has 10 threads running for it which is much better than anticipated.

The tests have been conducted for servers having over 30 recorders and 900+ cameras for each user which record up to a hundred thousand alarms over the span of 48 hours. Even after such heavy loads, the simulator shows no sign of crash and the performance is stable.

Plans of integrating video compatibility to this simulator are underway, where the administrator will also be able to access live video feed for each users different camera using the simulator itself, instead of the MaxPro VMS software.

This same simulator code can be modified and used for NVR camera systems, hence making ACS an integral part of the VMS and NVR teams.

Table 4.1: Project Detail

Student Details

Student Name	Devendra Khemka		
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Project Details

Project Title	VMS Multiple Client Login Simulator		
Project Duration	6 Months	Date of Reporting	04-01-2016

Organization Details

Organization Name	Honeywell Technology Solutions Lab
Full Postal Address	19/2, Adarsh Palm Retreats, Bangalore East Taluk, Devarabisanahalli Village, Bellandur, Bangalore - 560103
Website Address	www.manipal.edu

Supervisor Details

Supervisor Full Name	Surajkumar Naik		
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