LAYERBOOM STRATEGY

by

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Strategy

ABSTRACT

The purpose of this MBA project is to analyze the market situation for one cloud computing company, LayerBoom, as it struggles with questions of expansion. Particular focus is paid to the current market situation within the cloud computing industry as well as the corporate structure of LayerBoom.

Keywords: Cloud Computing, Entrepreneurship, Strategy

Table of Contents

Glossary

VM (Virtual Machine)

VPS (Virtual Private Server)

Node-Servers that hosts Virtual Machines

Virtual Machine

Virtual Private Server-A Virtual Machine created to generate revenue

Private API Key-Credentials to access Private API

Users-Individuals classified either as Administrators or End-Users

End-User-Individuals using Virtual Machines

Admin-Individuals who can manage one or more controllers

Server-See Node

Data Center-A location with one or more appliance

BoomBox-LayerBoom's name for our Virtual Appliance

VC 1000-Virtualization Controller 1000 (delete last 0 to indicate number of nodes this controller can manage up to)

Director-The program in the BoomBox that talks to Nodes

Agent-The program in the Node that talks to the BoomBox

Image-Virtual Appliance Template

Task-Unit of work issued by BoomBox, performed by nodes

Package-Templates for Virtual Machine's virtual hardware resources

UUID-Universal Unique Identification for Virtual Machines, disks and volumes

VM Name-The name assigned to a Virtual Machine

OS Volume-The disk that runs the Operating System of the Virtual Machine

Data Volume-The disk that stores the data of the Virtual Machine

*Upon re-imaging, only the OS Volume gets re-created, the Data Volume remains constant

Managed Disks-Physical drives on the node, used to create Virtual Machines

Network Boot Image-The file a node downloads to start its Operating System

Cortex-The Web Interface component of the BoomBox

Public API-Also called the LayerBoom API, used by end-users

Cloud-The collective server environment connected together

Meta Data Proxy-The program that relays the information of the Virtual Machine to the Virtual Machine.

Executive Summary

The purpose of the following paper is to analyze the market situation in the cloud computing industry as well as to assess the marketability of one specific company, LayerBoom that has seen rapid success on the market. Cloud computing, in simple terms, is a system of virtualized computers presented as a unified source (Buyya, Yeo and Venugopal 2008). Cloud computing provides consumers with a mechanism to access information from anywhere in the world rather than being tied to their personal computer or computer system (Buyya, Yeo, Venugopal, Broberg and Bradic 2008). LayerBoom is uniquely positioned in the cloud-computing arena because of their creation of a hardware product, The BoomBox, which makes cloud-computing user friendly and affordable.

LayerBoom is a Vancouver based cloud-computing corporation with a focus on visualization software and hardware. LayerBoom offers a complete, fast and inexpensive instrument to cloud computing through their primary product offering -- the BoomBox. The BoomBox, a highly automated cloud creation and management electrical apparatus, is the industry's first virtualization appliance. The BoomBox is extremely user friendly; consumers merely place the BoomBox into a server infrastructure and the BoomBox instantly converts the infrastructure into a cloud environment. Along with the ease of use, the BoomBox also offers customers a wide variety of other benefits that make LayerBoom a highly lucrative corporation in the cloud computing in-

dustry. The BoomBox not only powers a cloud system, but it also includes a web-based interface that allows companies to monitor, maintain and manage their newly installed cloud system. Customers are able to install it themselves and thus deploy the virtual machines allowing the company to enjoy the full benefits of the cloud immediately. Finally, the BoomBox offers a minimum of 50% savings relative to comparable competitors. The BoomBox is a fast, easy and affordable method to instant provisioning and a superior infrastructure.

The current market for LayerBoom products are Small and Medium Enterprises (SME's). The SME market has been largely ignored by cloud computing firms. The high prices and cumbersome installation practices of most cloud computing systems have made implementation prohibitive in most SME's. While cloud costs are often seen as exorbitant for most small companies, SME's are realizing increased need for virtualization products that can be deployed efficiently into their own server infrastructure. Layerboom's technology provides an easy manner for SMEs to deploy virtualization products by making the process as simple as setting up a home router.

The purpose of this paper is to identify the Key Strategic Focus (KSF) of the virtualization industry and evaluate Layerboom's current strategy as it determines a corporate acquisition strategy. The paper highlights eight key strategic areas for LayerBoom to use in determining the best options going forward; they are: Ease of Use, Implementation Costs, Scalability and Elasticity, Global Customer Service, Enterprise Customers, Customer Retention, Technological Adoption and New Product Offerings. Given the success of LayerBoom there are three major avenues the company can follow to expand: acquisition, angel funding or venture capital (VC) funding.

Given the key strategic focus of LayerBoom and the analysis that follows, my assessment is that acquisition is the best option for LayerBoom's future.

Introduction

Overview

The cloud computing industry has received a great deal of media attention and buzz; large corporations are investing millions into the expansion of existent cloud computing systems as well as the acquisition of smaller companies with unique cloud computing software and hardware offerings. While demand for innovative cloud systems have grown, limited options have been made available for small and medium enterprises (SME's). The following paper will analyze the current cloud computing industry market and one particular company, LayerBoom, in specific. The paper delves into the acquisition strategy that Layerboom has employed. LayerBoom Systems is a Canadian Corporation focusing on virtualization technology and situated to target small and medium businesses. The remainder of the paper examines potential market orientation strategies for LayerBoom as they continue to expand and increase in popularity.

LayerBoom Systems has built the industry's first virtualization appliance, offering its customers the ability to rapidly deploy, manage and monitor cloud-computing environments in a simple and low cost pricing model. Virtualization itself is the foundational building block of any cloud computing environment; LayerBoom can potentially go after a wide range of target markets, from Internet Service Providers, Managed Service Providers, Data Centers, Small and Medium Sized Businesses, to Fortune 500 Enterprise customers all require and demand a fully virtualized server

infrastructure. LayerBoom garnered a great deal of attention from larger corporations and venture capitalists after their introduction of one product, the BoomBox.

The BoomBox is electronic hardware that allows companies to convert existent systems into full clouds in less than ten minutes. A cloud is a virtual system of computers presented as one source. Companies are increasingly drawn to cloud computing systems because it allows employees to access and use documents from anywhere in the world without being stuck to one particular computer or network. However, the crippling costs and cumbersome installation practices of most cloud computers make cloud installation prohibitive for most small and medium size companies. The BoomBox is as easy to install as a router and affordable as well. Thus, the market potential of the BoomBox is enormous and has lead to the attention that LayerBoom has been getting.

LayerBoom has numerous options as they decide how to move forward as a company. The first option is for LayerBoom to accept venture capital (VC) funding. Were LayerBoom to accept VC funding, they could expand operations and productions and continue to expand their sales. Another option is to accept a buyout by a larger competitor. Were LayerBoom to accept a buyout offer, they would hand over all sales and management to a larger corporation. While LayerBoom's current team would have less long term involvement in the development of the BoomBox as well as their sales, they so to will have less liability. Given the analysis that follows, LayerBoom's best option is to accept and acquisition offer by a larger firm. A full buyout will allow LayerBoom to mitigate financial risk going forward.

The layout of the paper is as follows; the paper begins with a summary of the historical background in cloud computing. Following this summary, an analysis of LayerBoom's current market position will be employed. Next, utilizing Porter's Five Forces the Key Success Factors (KSF) of LayerBoom will be analyzed in order to provide a portrait of the current cloud community landscape. The purpose of this analysis is to better understand LayerBoom's current position in the market place .The proposed LayerBoom market strategy is then examined and compared with the firm's existing resources and competencies to determine if the strategy is feasible and how LayerBoom should implement the new proposed strategy. Finally, recommendations are made to bridge any gap between strategy and implementation to address the issues for the firm to reach its target market.

1.1 Historical Background

To begin the discussion of the Cloud Computing Industry we start by examining the historical evolution of computer and human interaction over the last fifty years. Cloud computing is, in the macro sense, the third evolution between human and computer interaction. To start defining this evolutionary process, we begin by examining why humans created computers. The three main functions of the human brain are: data exchange, data storage, and data processing; this is the reason computers main functions are data exchange, storage and processing (Beltram and Koslow 1999). Mainframe Computers were created post WWII, and humans interacted with computers through punch cards. At their creation, computers were extremely expensive, and many people shared a single computer (http://en.wikipedia.org/wiki/Neuroinformatics).

The next phase in human-computer interaction was Personal Computing -- due in large part to advances in semiconductors and Moore's Law. Moore's law states that semiconductor prices decrease by 50% and double in speed every eighteen months. Advances in the semiconductor industry pushed personal computing rapidly, enabling a one-to-one ratio between humans and computers while shrinking its size, resulting in a transition from desktops to laptops to mobile devices (Moore 1975). By virtue of Moore's law, the relative costs associated with computers were pushed down making computers more affordable for individuals.

The next phase in the evolution of human-computer interaction was cloud-computing. The Cloud Computing evolution started since the Internet was commercialized, the Internet moved one criti-

critical computer function over the network instead of performing this task locally, that function is data exchange. Prior to the Internet, humans had to share information across multiple machines by storing data onto an external storage device, such as a floppy disk, and then hand over the physical device to share information. Since the Internet came onto the scene, data exchange can be performed by simple tasks such as electronic mail (email). The next function that moved the network was data storage. The best example of this is Gmail, the email system attached to Google. Gmail stores email over their network in Google's data centers, users never archive or backup email but have access to data files from anywhere.

Cloud computing is defined as any service application provided through the Internet and the hardware in the data centers that provide online services (Armbrust et. al. 2010). A cloud is a system of virtualized computers presented as a unified source; virtualized data nodes enable most web 2.0 processing (Buyya, Yeo and Venugopal 2008). Cloud computing has gained increased popularity, as evidenced by the increase in google searches and news references in the last two years (Buyya, Yeo and Venugopal 2008). The popularity of cloud computing has increased the potential value for new companies entering into the market as well as suppliers of cloud computing software and hardware (Buyya, Pandey and Vecchiola 2009). Some estimate the cloud computing industry to grow to $160 Billion in realized value through advertising and business needs (Executive Brief 2010).

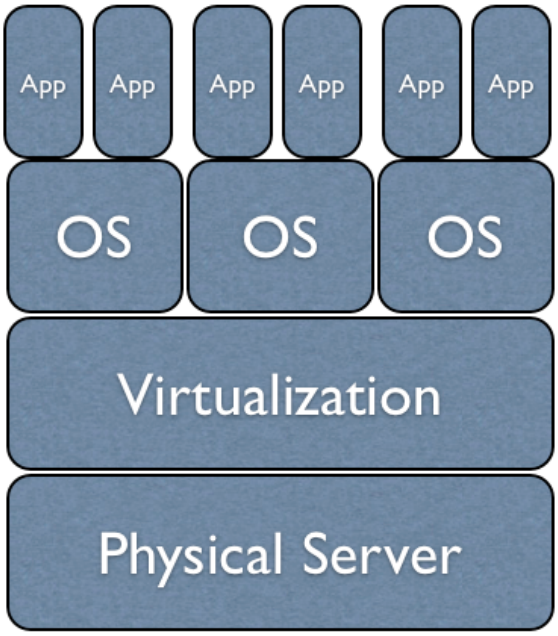
Cloud computing came about in response to increased consumer demand for more robust transient computing systems (Buyya, Yeo, Venugopal, Broberg and Bradic 2008). Consumers are becoming more dependent on their PC's (personal computers) and at the same time they are

looking for systems that allow them to work between locations and not be tied to their home or office computers (Armbrust et. al. 2010). A company's ability to respond to this increase in demand can be the difference between success and failure in the market place. As such, large corporations such as Apple and Google have turned to cloud computing as a means of helping customers realize more flexibility and function in online services. Furthermore, the explosion of social networking has driven up demand for cloud computing (Gillet 2008). To date the implementation of cloud computing has been cost prohibitive to most small and medium companies creating a market opportunity for companies that can produce a cloud system at an affordable price.

In cloud computing, the most recent and most complicated function to move over to a network is data processing. Data processing is the primary focus of LayerBoom. Once data processing transformation is complete, the three main functions of computers will have been moved from local hardware (laptop) to a network, thus completing the transition from Personal to Cloud Computing.

In essence, Cloud Computing enables almost unlimited computational power at the fingertips of a single user. Over time, the human to computer relationship has reversed from one computer and many humans to one human and many computers.

LayerBoom is involved at the foundational level of Cloud Computing -- Virtualization. To enable physical servers to start hosting virtual servers by segmenting its hardware, a virtualization hypervisor must be first installed on the physical server. Virtualization, the foundational level above which numerous virtual servers, can run different operation systems (OS) such as Windows, Linux and OSX. Within each virtual server based on different OS, users can install a variety of software applications.



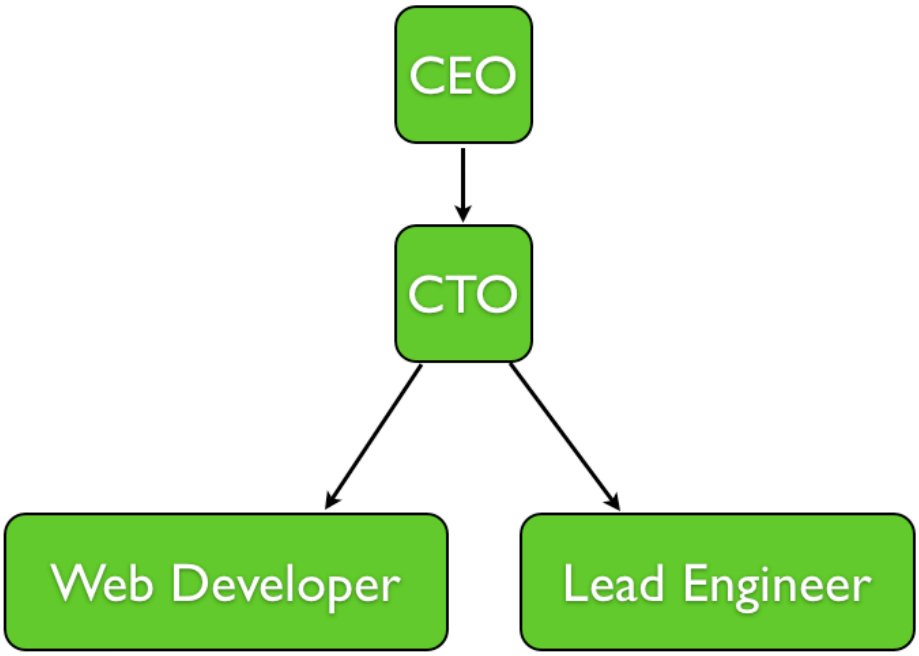
The LayerBoom business structure was similar to that of Slicehost in St. Louis. Slicehost was a Virtual Private Server (VPS) hosting company that started in August 2006. The Slicehost service caught market demand that increased rapidly. Slicehost was ultimately sold to Rackspace in October 2008 for $25 million. The LayerBoom team designed the business to mimic Slicehost service offerings only, based in Canada. For geographical legal reasons, such as the U.S. Patriot Act, numerous Canadian corporations are forbidden to use US based cloud services such as Slicehost. As such, a market need was identified and LayerBoom set out to fill it.

LayerBoom spent the initial phase of business developing a prototype. Once the prototype unit was ready to go to market, we discovered our market offerings were unique when compared to those of our competitors in the US and Canada. Specifically, the prototype could be used by or-

ganizations to rapidly deploy, manage and monitor their server infrastructure. At that point, the Layerboom team decided to produce and market the prototype as the World's first cloud computing virtualization appliance.

1.2 History

LayerBoom Systems is a privately owned Canadian company that specializes in Cloud Computing Management Solutions. LayerBoom's specialty is in providing an easy to use, complete and affordable path to cloud computing, enabling SME's to use cloud computing. The company started operations in May, 2009 and has completed product development, prototype, test use cases and real customers in 10 months on a $150,000 budget. LayerBoom technology is so advanced that it rivals that of Amazon Web Services on the service side and VMWare on the software side. Since the company is relatively young, its current org chart is as shown below:



LayerBoom Organizational Chart

LayerBoom currently offers two different products depending on the customer requirements. The first product is the world's first virtualization appliance, a pre-manufactured server box that enables cloud creation as simple as setting up a home router – the BoomBox. The appliance allows customers to create Private Clouds so the infrastructure can be used in a highly secure fashion while enjoying the full benefits of virtualization. The second product is a web based service that enables companies to create virtualized infrastructure with a downloadable USB drive, this model means the customer's servers will dial into LayerBoom's public servers and customers will be billed monthly instead of a one time price as with the appliance. The rationale was the two products targeted two different market segments. While the appliance targeted medium sized businesses to large enterprise customers, the live image allowed small businesses and developers to quickly develop and start using the platform.

1.3 Problem

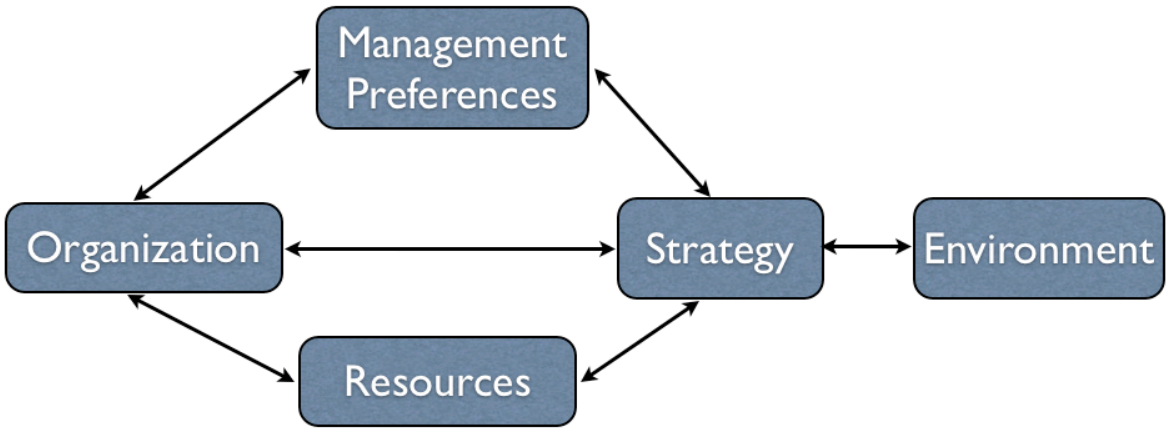
LayerBoom finished developing its main products in 10 months with a three person technical team and is now faced with a strategy question as to which market segment to focus its resources on. The three primary potential markets are:

1. Enterprise Private Cloud
2. SMB Private Cloud
3. ISP Public Cloud

LayerBoom's first customers were primarily ISP Public Cloud and SMB Private Cloud. Few Enterprise Private Clouds were interested and it took LayerBoom longer lead time to close them. The very nature of potential LayerBoom customers further complicates the marketing targeting goals specifically; numerous customers are included in all three business types.

The purpose of this project is to identify the key features of LayerBoom products and position them accordingly to customers who would most benefit from our offering. In order to properly target our product, the competitive landscape is analyzed to determine competition, competitive advantage, respective target markets and the dominant market. Porter's 5 Forces was used to analyze LayerBoom's positioning. An internal analysis was conducted to determine LayerBoom's resources, product features and capabilities to focus on a target market. We utilized the Bukszar Scale as a metric to provide further directional guidance. Finally, once the target market was determined, a strategy was formulated with specific actionable items and recommendations in-

cluded. The methodology employed was the Diamond-E Framework to establish consistent goals between the environmental requirements, the corporate strategy and the internal capabilities of the firm.



1.4 Corporate Strategy

Prior to the in depth analysis of LayerBoom's position, we first begin with an overview of the current corporate strategy. I used Michael Porter's Five Forces Analysis as the base model to examine Layerboom's corporate strategy as well as a base reference for competitive analysis. It is quite clear that as Layerboom is both a start up and brings a disruptive technology and pricing model to the market, Layerboom is currently deploying a Cost Based Strategy. The table below indicates LayerBoom's positioning relative to others the cloud computing industry.

	Cost Base						Differentiation
Product Strategy	Rapid Follower	★					Innovative
R&D Expenses	Low R&D	★					High R&D
Structure	Centralized	★					Decentralized
Decision Making	Less Autonomy					★	Autonomy
Labour	Low Skilled					★	High Skilled
Marketing	Low Cost	★					High Cost
Risk Profile	Low Risk					★	High Risk
Capital Structure	Leveraged	★					Conservative

1.4.1 Product Strategy

From the product standpoint, Layerboom is an innovative company in that it produced the industry's first virtualization appliance. However, the software which sits inside the appliance is the true product which Layerboom developed and not an innovative product, rather a follower. The appliance model or hardware that comes with the software is merely a vessel to get the software to market. LayerBoom decided to design the hardware for 2 major reasons:

1. Total Product Life Cycle Management.

From a user perspective, it is easier to control the quality of experience and to support the product if the hardware is specked according to the product company. There is no better example of this than Apple v. Microsoft; one of the reasons Windows crashes so often is the fact that the software has to support every single kind of hardware, from different CPUs to different RAM and video cards. This creates a huge headache in quality of the code as Microsoft doesn't produce product drivers; instead, the code is produced by third party hardware providers. In the case of Apple, all hardware used is controlled and optimized by the Apple team which enables a much better user experience and provides Apple with the ability of seamlessly integrating the software and hardware. Most appliance companies, such as Barracuda Networks in San Francisco or Strangeloop Networks in Vancouver, have the ability to provide a complete experience to customers by covering the whole process from product purchase, warranty, product update and support without the headaches associated with partial providers. Due to the ease of quality control

over product life cycle and management, Layerboom decided to launch its product as an appliance and not as software.

2. Differentiation.

All the current virtualization providers in the industry are selling their product as software. The benefits of selling software are:

1. Easy to provide.

Providing software through websites is easy for corporations. Through websites, firms can provide both less featured “trial versions” as well as full featured products with limited “trial periods.

2. Shorter sales cycle.

Software sales cycles are often shorter for both the firms as well as end users. By having access to the product through the web and with automated payment methods, the decision makers can use and purchase products without firms having to employ, train and staff sales teams.

3. Low operating cost.

Selling only software can lower operating costs for companies. The nature of selling software is that costs are primarily generated in research and development. Internet broadband today lessons distribution concerns for corporations. The only thing firms

need to deliver in enterprise software into client infrastructure is a connection fast enough for downloads.

One of the questions Layerboom always encountered in the early days was: “why would I buy your products and not VMWare’s”. As a result, Layerboom had to differentiate from a product feature standpoint, and had to include tools that VMWare hadn’t developed. In order to understand how to differentiate, we first needed to understand what the issues of VMWare were. These included:

1. High Cost
2. Difficult to Implement
3. Takes too long to install

In response to market concerns over VMWare, Layerboom’s strategy was to devise a product with less features. However, from the user standpoint, it has to have ease of use and a friendly interface. Correspondingly, the core values that Layerboom aims to deliver are

1. Low Cost
2. Easy to Implement
3. Fast installation

With these core values in mind, Layerboom created our end product, the “Boom Box”. The BoomBox offered the following attributes as compared to similar offerings from VMWare.

	Layerboom	VMWare
Cost	$4/seat	$200/seat
Implementation	Simple	Certification Required
Installation	0h 15m 0s	6 months

Once the management decided on product attributes, it was merely a matter of deciding which form in which we would offer the product. After extensive analysis, LayerBoom executives decided that the appliance model was the only true manner in which Layerboom could deliver a simple, fast and cost effective solution.

3. Financial

Once we started reviewing the appliance business model, two things jumped out to the Layerboom team 1) how would we fund the development of the company, and 2) how we would price the BoomBox. Below is the summary of the financial options as presented to LayerBoom.

1. 10x.

After speaking with both Johnathan Bixby, CEO of Strangeloop Networks, and Michael Perone, Cofounder of Barracuda Networks, we found the industry standard in price per unit is 10 times the cost of hardware. For example, if a server cost the firm $300 to acquire, the selling price of that unit would be $3,000. Once we knew the 10x formula, the “Boom Box” pricing was set.

	BoomBox				
	VC 1000	VC 500	VC200	VC100	Notes
Appliance	large - redundant	med	small	mini	
Max Nodes	100	50	20	10	
Revenue/Unit					
One time per unit	CA$25,000	CA$12,000	CA$5,000	CA$3,500	
SW updates/yearly	CA$5,000	CA$2,500	CA$1,200	CA$1,000	Required
8x5 em Support/yearly			CA$1,200	CA$995	One support option required
24x7 em Support/yearly		CA$2,900	CA$1,950	CA$1,700	
24x7 ph support w 2 hr response/yearly	CA$4,500	CA$3,360			
HW warranty - one year	CA$0	CA$0	CA$0	CA$0	

2. Recurring Revenue.

Unlink the appliance model, the SAaS (Software As a Service) solution generates monthly recurring revenue; this solution initially seemed like it was the way to go. However, due to the hardware nature of the appliance, recurring revenues are generated in the form of two products.

A. Software Updates.

In a SAaS model, only one “production” copy is kept because this copy enables all the users to log in and use the system. As a result, software updates simply have to be pushed from QA (Quality Assurance) into production. However, in an appliance model, since software is sitting locally at customer’s site, updates have to be pushed from QA onto the customer platform. This can get tricky because customers may end up with different versions of the same product. In most cases, additional product features will provide an inventive for customers to update software and pay for it on an annual basis.

B. Support Contracts.

In a SAaS model, no support contracts are needed because the sole responsibility of maintaining a working version sits with the service provider. However, in an appliance model, as software sits locally and different system administrators have different skill sets, a support contract is usually provided to enterprise peace of mind and a software expert in case of emergency.

3. Simple.

VMWare has a highly complex and confusing pricing model. I often compare the VMWare pricing model to buying a car: there is a base price for the product, but to buy wheels and a steering wheel customers are expected to pay a lot more. Layerboom’s product assumes that if customers are to virtualize their server infrastructure, a layer of management tools are needed to sit on top of the hypervisor. Layerboom therefore provides all the tools necessary to manage that environment to its end users. The idea was a simple product and the appliance model provided a simple pricing, one flat fee for the appliance that powers, monitors and manages your virtual environment.

1.4.2 Research and Development Expenses

One of the major benefits of being in Canada is the government programs available to Canadian companies. Below is a quick table comparing funding benefits in China, the USA and Canada.

	China	US	Canada
Angel Investment	☑	☑	☐
VC Investment	☑	☑	☐
Government Programs	☑	☐	☑

While Angel and VC funding are far and few between in Vancouver, two government R&D programs stand out.

1. IRAP

IRAP (Industrial Research Assistance Program) is a great program for start-ups. This program provides funding in the form of projects and grants, hence it is able to deliver funding to companies without diluting existing shareholders. Layerboom received a total of $16,000 in the last 13 months from IRAP.

2. SR&Ed

SR&Ed (Scientific Research and Experimental Development) is another program which refunds firms some of their last fiscal year spending. Layerboom received a total of $89,000 from SR&Ed.

The R&D phase for Layerboom was extensive since we had to develop the technology from scratch. While KVM is a good hypervisor, it was still in it early stage; what the Layerboom team

was doing was pushing the development for the product on a global scale. Being the only Canadian company focusing on this aspect of the cloud is also unique for Layerboom, as most other Canadian "Cloud" companies focused on niche markets with a niche product. Layerboom's vision was to revolutionize the way organizations perceived virtualization.

1.4.3 Structure

Since Layerboom is a privately held company with four employees including its founders, the structure is extremely simple by design. For the corporate structure, single class common shares were issued and no preferred shares are outstanding. The board consists of the two founders so decision can be made quickly, and only seven shareholders exist (including the four employees).

1.4.4 Decision Making

As a smaller firm, decision-making is one of Layerboom's strengths. Due to its simple structure, decisions are made quickly on both the product and technology development sides. This is evident in the fact than in the last 13 months the product form for Layerboom has gone through three iterations while the software product has remained consistent.

1.4.5 Labour

In Layerboom's case, since the appliance is outsourced to Dell, there is no labor in a manufacturing sense. However, the IP (Intellectual Property) Layerboom owns is solely developed by its employees. These employees are highly skilled in Linux and different programming languages such as Ruby on Rails, C+, and other open source projects.

1.4.6 Marketing

Layerboom's marketing efforts recently ramped up as a product launched in March of 2010. The initial marketing campaign intended to spend as little money as possible; to date, the total dollars

spent marketing is $0. Layerboom received much attention from potential customers because of various open source projects we contributed to, reviews done by bloggers and different social media tools readily available for free such as twitter and blogs.

1.4.7 Risk Profile

Layerboom's risk profile is high for of three reasons.

A. Start up

As a start up, Layerboom is a team of four people trying to challenge both Amazon Web Services on the public cloud side and VMWare, a $22 billion dollar company on the enterprise private cloud side. Calling this idea a David v. Goliath scenario is an understatement.

B. Limited Financing

From inception Layerboom received only $160,000 in real cash investment, the other investment came in the form of government grants and services. This limited financing restricted Layerboom's go to market strategy early and also limits Layerboom's ability to scale globally.

C. Geographic location

Since Layerboom is located in Vancouver, Canada and not based in San Francisco like most of the technology world, both funding and beta customers were difficult to locate. The American VCs would prefer if Layerboom was based out of US. Moreover, since no Canadian VCs had either the vision nor the funding it created a lot of problems for Layerboom. On a fundamental level, the risk profile for Layerboom will never be low because technology is always evolving and Layerboom is in the center of the tech world.

1.4.8 Capital Structure

Being a private owned company, Layerboom's capital structure is extremely simple, with seven investors and single class common shares.

Layerboom Fully Diluted Capital Stock		Percentage Now	Percentage Post Bootup	Percentage Full Dilution
From Central Securities Register				
Howard Wu	5,000,000	43%	39%	**36.67%**
Trevor Orszтynowicz	5,000,000	43%	39%	**36.67%**
Michael Wang	526,316	4%	4%	**3.86%**
TOTAL	**10,526,316**			
From Stock Option Plan				
Total Reserved	**1,170,000**	10%	9%	8.58%
Tim Ames	68797			**0.50%**
Josh	265,505			1.95%
Kevin	132,752			0.97%
Total	11,696,316			
From Bootup Convertible Promissory Note				
Conversion Price				
$850,000 / the number of the company's common shares outstanding immediately prior to				
Conversion not taking into account common shares issuable upon conversion of notes of				
the same series				
$850,000 / (10,526,316 + 1,170,000) = $0.0727 per share				
Available Shares				

$150,000 / 0.07732 =	**1,940,006**		15%	**14.23%**
Fully Diluted Cap Stock	**12,933,376**			
Josh	351473			2.58%
Kevin	351473			2.58%
Total	13636322			
Josh Total				**4.53**
Kevin Total				**3.55**

1.4.9 Summary

In Chapter two, the external analysis is to identify the KSF of virtualization industry and use as a measuring tool for comparison between Layerboom and its competitors and the findings will be used to evaluate the current strategy as well as formulating new ones if necessary.

In Chapter three, the internal analysis is utilized in order to evaluate where Layerboom stands in the grand scheme of things, considering all resources available to Layerboom.

In Chapter four, a recommendation is made on two aspects: the corporate strategy side and the financial options side. Because Layerboom is still trying to secure funding, the financing strategy plays an important role in the overall strategy.

External Analysis

The Cloud Computing market is one of the fastest growing markets in IT today. With a CAGR of 30%, it is projected to be a 1.4 billion dollar industry by 2012. The industry is still in its infancy as we are in year two of a twenty year life cycle. Three firms, VMWare, Citrix and Parallels, mainly control the market. While the virtualization technology was considered a difficult problem to solve ten years ago, recent advancements in open source products have enabled virtualization to be provided for free. The rapid depreciating value of providing a hypervisor means firms are now focused one layer above the hypervisor - the management and monitoring layer of the overall cloud infrastructure.

To evaluate the industry, Michael Porter's Five Forces model is used to better examine the industry environment. We will attempt to answer three questions upon completing the analysis. First, is this industry attractive? Second, will the industry continue to be attractive? Third, what are the KSF (Key Success Factors) in the industry.

2.1 Analysis of the Industry Picture

Following the industry picture, we attempt to further define each aspect and detail of the above picture for a more precise response to each scenario.

2.1.1 High Threat of Entry

The threat of entry is high due to several reasons, but first, please see below for a list of hypervisor solutions available in the industry.

1. VMWare-ESX Hypervisor
2. Citrix-Xen Hypervisor
3. Redhat-KVM Hypervisor
4. Microsoft-Hyper V Hypervisor

VMWare's ESX Hypervisor was developed exclusively by VMWare for VMWare customers and thus has been a proprietary product since day 1. The Xen Hypervisor started out as an open source project, but was purchased by Citrix in 2007 for $500 million. Redhat acquired the KVM Hypervisor, another open source project in 2008. Microsoft developed its own hypervisor called Hyper V. The difference between the two open source projects, namely Xen and KVM, is that while KVM continues to be free, Citrix has decided to charge for its Xen product. Another major difference is more technical but not to be underestimated, KVM is a hypervisor written into the Linux Kernel while Xen remains as a hypervisor that sits on top of the operating system. This means that for every new feature, KVM can take advantage of the global contributions written for Linux while Xen features have to be custom written and programmed into the Xen hypervisor. With this in mind, the LayerBoom team chose to go with the KVM hypervisor and started building management and monitoring tools on top at a time when very few firms are using KVM. From 2009 to 2010, however, KVM has gained much momentum and popularity amongst global developers. Furthermore, because the hypervisor remains free, firms are developing tools on top to manage and monitor KVM environments. This makes the Threat of Entry relatively

high as evidenced by what LayerBoom has been able to accomplish in 8 months with only three developers.

2.1.1.1 Scale Effects (+)

Because of the nature of the software industry, the business is highly scalable. Once the development on the management and monitoring tools are complete the product can be distributed globally with very minimal delivery and production cost. In fact, the cost of distribution is almost zero; at one point Layerboom thought about open sourcing its product to attract a wide user base and rapid distribution and contribution. The large market demand for "virtualized infrastructure" means the question for most firms is no longer "do I want to virtualize", but "what virtualization technology do I want to deploy". Due to its highly scalable nature, smaller firms can develop management and monitoring layers on top of the hypervisor and enter the market with relative ease as Layerboom has demonstrated.

2.1.1.2 Steep Learning Curves (-)

This is a major barrier to entry due to the relatively new virtualization technology which is further coupled by the amount of available open source tools. To learn to build a virtualization layer on top of the underlying hypervisor requires substantial effort. The ability to learn and think independent of current technology while pushing the advancement of technology and keeping user requirements in mind requires a high degree of effort from employees.

2.1.1.3 Certification and Government Regulation (+)

In the virtualization world, the technology itself has only been around for less than ten years, and the hardware requirements that compliment the software have only been available in the last six years. The cloud computing move into mainstream has only begun in the last two years. Because

we are only in year two of a 20+ year cycle, the industry is still young. Currently, there are no standards on hypervisors, nor government regulations in the industry.

2.1.1.4 Low Capital Requirements (+)

The industry can be considered low in capital requirements, unlike technology manufacturing. For example, manufacturing semiconductors has high capital requirements for equipment and labour whereas virtualization entry is very inexpensive. For example, take Slicehost; two guys from St. Louis starting a hosted virtual server with no outside investment and were able to generate $2.5 million in revenue over 18 months. The company was sold in 25 months for $25 million. Slicehost accomplished all this with only 10 employees. The scalable and elastic nature of virtual machines means operating costs are at a minimum and this creates a very lucrative potential environment for mimics.

2.1.1.5 Potential for High Profit Margins (+)

Layerboom's products are all variations of the software that provides the management layer on top of the hypervisor layer. Due to its nature of the software industry, distribution costs and production costs are extremely low. In today's world of downloadable images, the distribution cost is almost reduced to zero.

2.1.1.6 High level of Integration (+)

One of the biggest issues in cloud computing today is cloud "interoperability", which refers to whether end users have a virtual server that is based on hypervisor A, and whether when the user decides to transition to hypervisor B he/she has the option of both changing vendor and technology. Layerboom's hypervisor is KVM, but it also is able to run on Xen and the team is currently working on integration with VMWare's ESX hypervisor.

2.1.1.7 Differentiation (-)

In Layerbooms case, differentiation decreases the threat of entry. Take Joyent as an example - because their public cloud offering is based on Sun Microsystem's Solaris operating system, Joyent could run with incredible efficiency while differentiating their product offering. By having differentitation on an application specific basis it is easier to get developer communities involved around the service.

2.1.1.8 Summary

Upon careful examination on the first force, clearly the threat of entry is high. We can also determine several KSF.

1. Ease of use
2. Low operating cost
3. Scalability and elasticity

2.1.2 Low Bargaining Power of Suppliers

Layerboom's product supplier mainly consists of server hardware vendors, including HP, Dell, Cisco and IBM. Due to the nature of Moore's Law and decreased hardware costs, the suppliers have a very low bargaining power over Cloud Computing.

2.1.2.1 Diversified Suppliers (-)

In the Cloud Industry, most software vendors are able to distribute products across the internet. This means there no supply chain is necessary. In the case of Layerboom, in which our product is a hardware server pre-loaded with Layerboom Software, suppliers can be any commodity server hardware vendor. As such, competition in this area is extremely fierce and price is extremely competitive.

2.1.2.2 High Integration (+)

As mentioned earlier, there is a high level of integration in the industry. In Layerboom's case, choosing the right OEM supplier is an important key, since the supplier will be directly involved with installation, shipping to support for customers.

2.1.2.3 Summary

After analyzing the second force, we can see that the KSF derived from this section is the low bargaining power of suppliers from a commodity hardware standpoint but that the suppliers are able to differentiate based on service level and logistical excellence. In Layerboom's case, we partnered up with Dell for the precise reason of able to service customers at a global scale.

2.1.3 High Bargaining Power of Customers

There is high bargaining power of the customers due to the low barrier of entry and the availability of open source tools.

2.1.3.1 Enterprise Customers (+)

In the Cloud Computing Industry, the early adopters were not SMEs. Instead, it was often large enterprises that saw a need to reduce spending on server farms that decided to consolidate server hardware by deploying virtualization. An example of this is Telus, which consolidated its server infrastructure from over 9,000 servers to around 7,000 servers by using VMWare. Due to the size of the servers they manage and operate, enterprise customers have considerable bargaining power when it comes to price. From the industry's standpoint, the cost of copying and distributing software on a finished product is relatively low so companies are often willing to accommodate and provide better pricing to win an enterprise customer.

2.1.3.2 Integration and roll out (-)

Due to different hypervisor technologies and different familiarity levels by systems administrators, the integration and roll out phase of virtualizing infrastructure puts some power back to the supplier side. Most staff who will be involved in the internal private cloud roll out have to be either certified or trained in specific hypervisor knowledge and/or in specific programming languages. On top of that, the continuity in support, maintenance, and update contracts are a great way for cloud companies to generate recurring revenue.

2.1.3.3 Summary

After the third force, we are able to arrive such KSFs from this analysis.

1. Enterprise customers will provide both credibility and followers if companies are able to persuade them to virtualize based on their technology.
2. Customer retention is vital for the continued support, maintenance and update of recurring revenues.

2.1.4 Low Threat of Substitutes

The purpose of virtualization is to treat a single physical machine as if it was many different servers. The fact that virtualization hypervisor is the newest/latest technology means there are currently no better methods of doing this. The idea of treating a single machine as multiple machines itself is not new; in fact, previously people went from emulators to drive partitions to virtualization. However, given that hypervisor technology today is able to emulate up to approximately 97% of real hardware, unless another breakthrough in software occurs, virtualization is predicted to be in place for the next 15-20 years.

2.1.4.1 Potentially Unlimited Profitability

The reason VMWare's stock price is trading at approximately 128 times its P/E precisely states this point: as the current leader in virtualization, VMWare is able to charge maximum rent extraction for its software. As there are no substitutes, businesses and organizations that want to virtualize while the product is fully supported go back to VMWare. As a result, the industry is able to perform price discrimination on an individual basis and therefore maximize its profitability.

2.1.4.2 Summary

After analyzing the fourth force, we are able to see that there is no substitute for the technology today, but that this is not guaranteed in the future. Hence, all the firms in the industry are trying to maximize their profit while balancing between competitions. Layerboom's goal has always been to fundamentally change the industry by destroying the model from perfect price discrimination to a simple pricing model. Layerboom intends to do this by making our product pricing public. The KSF we derived in this force is that the technology is always changing, and therefore the ability to keep up with the newest trends in virtualization is vital.

2.1.5 High Rivalry Among Existing Competitors

The current Cloud Computing Industry has high rivalry among existing competitors. This high rivalry occurs for a number of reason. The main reason is that the industry is new, and therefore no one has defined the exact terminology of what Cloud Computing is. This rivalry is coupled by other factors, such as pricing, roll out, ease of use and the low barrier to entry. In combination with unlimited profitability and high valuations, this makes this industry the hottest IT trend globally.

2.1.5.1 Fast Growth (+)

Cloud Computing has had the highest growth in all of IT for the past 2 years, and the virtualization piece is central to cloud computing. This fast growth and adoption by businesses, organizations and individuals makes Cloud very competitive.

2.1.5.2 Heterogenous Service (-)

Despite different virtualization hypervisors, some customers view virtualization as simply a way of decreasing hardware costs. When viewed in this manner, the technology and service appears quite herterogeneous. From the larger point of view of un-virtualized servers to fully virtualized cloud stack, this is correct. Fortunately, there is no substitute for virtualization; despite the fact the service is heterogenous, customers will nonetheless have to pay a premium for obtaining virtualization.

2.1.5.3 Low Fixed Costs (+)

Due to low fixed costs, and low barriers to entry, rivalry becomes extremely intensive in the industry. The initial costs involved in getting into the business can be extremely low as we have seen. Firms can start as consulting firms or simple service providers and grow into VC backed businesses.

2.1.5.4 Summary

After the fifth force, we realize that high rivalry means the industry is highly fragmented on the service side, while the rapidly decreasing cost of hypervisors means software firms must start building tools on top of the hypervisor to continue to provide value to customers.

After analyzing the five forces, we now turn to the original three questions. First, is the industry attractive ? The answer is yes. Given the unlimited profitability and low barriers to entry, the

ROI we see so far very attractive. Second, will the industry continue to be attractive? The answer is again yes. As long as a substitute technology to the hypervisor virtualization doesn't emerge, organizations will continue to have a mentality of doing more with less while raising energy costs is a concern. Given the macro economic and environmental circumstances, the industry will remain attractive and strong in the coming years.

The last question is to answer what are the KSF in the industry. As we identified here, the eight KSF for the industry are:

A. Ease of Use

B. Low implementation cost

C. Scalability and Elasticity

D. Service Global Customers

E. Enterprise Customers

F. Customer retention for recurring revenue

G. Rapid adoption to new technology

H. Continue to add tools on top of virtualization to provide value to customers

2.2 Competitive Analysis

For the purposes of this analysis, three key competitors will be analyzed.

1. VMWare

VMWare was the pioneer in virtualization. The company was established in 1998 before anyone knew anything about virtualization. Later, in 2001, VMWare went on to provide hypervisor technology on the server side and was acquired by EMC in 2004. Today, VMWare is a publicly traded company with a market cap of $26 B (As of July 1, 2010) and a P/E of 126 and annual revenues of $1.9 B.

	Cost Base						Differentiation
Product Strategy	Rapid Follower					★	Innovative
R&D Expenses	Low R&D					★	High R&D
Structure	Centralized					★	Decentralized
Decision Making	Less Autonomy					★	Autonomy
Labour	Low Skilled					★	High Skilled
Marketing	Low Cost					★	High Cost
Risk Profile	Low Risk					★	High Risk
Capital Structure	Leveraged	★					Conservative

It is clear from the profile that VMWare remains dedicated to trying to be the innovative driver in this field. Located only ten minutes away from Stanford University and with multiple large enterprise customers, VMWare is able to hire the best talent and acquire the necessary funding to continue its differentiation strategy.

2. Citrix/Xen

Citrix acquired Xen when it was an open source project hypervisor. Since then, Citrix has turned Xen into a major initiative in the Citrix family. Competing head to head against VMWare, Citrix also focuses on the enterprise virtualization.

	Cost Base						Differentiation
Product Strategy	Rapid Follower		★				Innovative
R&D Expenses	Low R&D				★		High R&D
Structure	Centralized					★	Decentralized
Decision Making	Less Autonomy	★					Autonomy
Labour	Low Skilled					★	High Skilled
Marketing	Low Cost					★	High Cost
Risk Profile	Low Risk					★	High Risk
Capital Structure	Leveraged	★					Conservative

Citrix is unlike VMWare in terms of revenue derived from virtualization. VMWare derives 100% of its revenue from virtualization whereas Citrix's revenue comes only in part from the Xen product. From a corporate strategy standpoint, it is important that Citrix has a virtualization product in its portfolio. Citrix is quite content in being the second fiddle in the enterprise virtualization space behind VMWare because the benefits of being the market leader would not outweigh the costs.

3. Parallels

Parallels was founded by Russian billionaire Sergei Belussov. Parallels' virtualization product is called Virtuozzo, which was developed in Russia and is now distributed globally. Virtuozzo is a different technology from hypervisors but its low cost makes the product attractive to service providers. Virtuozzo owns the majority of the hosting business.

	Cost Base						Differentiation
Product Strategy	Rapid Follower	★					Innovative
R&D Expenses	Low R&D	★					High R&D
Structure	Centralized	★					Decentralized
Decision Making	Less Autonomy					★	Autonomy
Labour	Low Skilled		★				High Skilled
Marketing	Low Cost					★	High Cost
Risk Profile	Low Risk			★			High Risk
Capital Structure	Leveraged			★			Conservative

In the case of Parallels, the firm is trying to employ a cost based strategy largely due to its target market. The target market Paralles has is the hosting industry, which are service providers who require virtualization for their customers and are mostly unable to compete with Amazon Web Services in size. As a result, the qualities of product these hosting companies look for are as follows:

1. Low Cost
2. Container technology (not true virtualization) for ease of management
3. A Channel partner

Parallels developed its product to satisfy all three of these requirements and currently enjoy the position as the only provider in the hosting industry market.

2.3 Proposed Strategy

Layerboom's current strategy is a mix of differentiation and cost based strategy.

	Cost Base						Differentiation
Product Strategy	Rapid Follower	★					Innovative
R&D Expenses	Low R&D	★					High R&D
Structure	Centralized	★					Decentralized
Decision Making	Less Autonomy					★	Autonomy
Labour	Low Skilled					★	High Skilled
Marketing	Low Cost	★					High Cost
Risk Profile	Low Risk					★	High Risk
Capital Structure	Leveraged	★					Conservative

The only real cost in Layerboom is the need for highly skilled workers. Typically, "rockstar" developers are hard to come by, it is important that Layerboom retains the necessary talent and is able to recruit new talent to keep developing according to its rapid follower strategy. Overall, Layerboom is consistent with its target strategy of being a cost based firm. Using the strategy map and what we learned are the KSF of the industry.

A. Ease of Use

B. Low implementation cost

C. Scalability and Elasticity

D. Service Global Customers

E. Enterprise Customers

F. Customer retention for recurring revenue

G. Rapid adoption to new technology

H. Continue to add tools on top of virtualization to provide value to customers

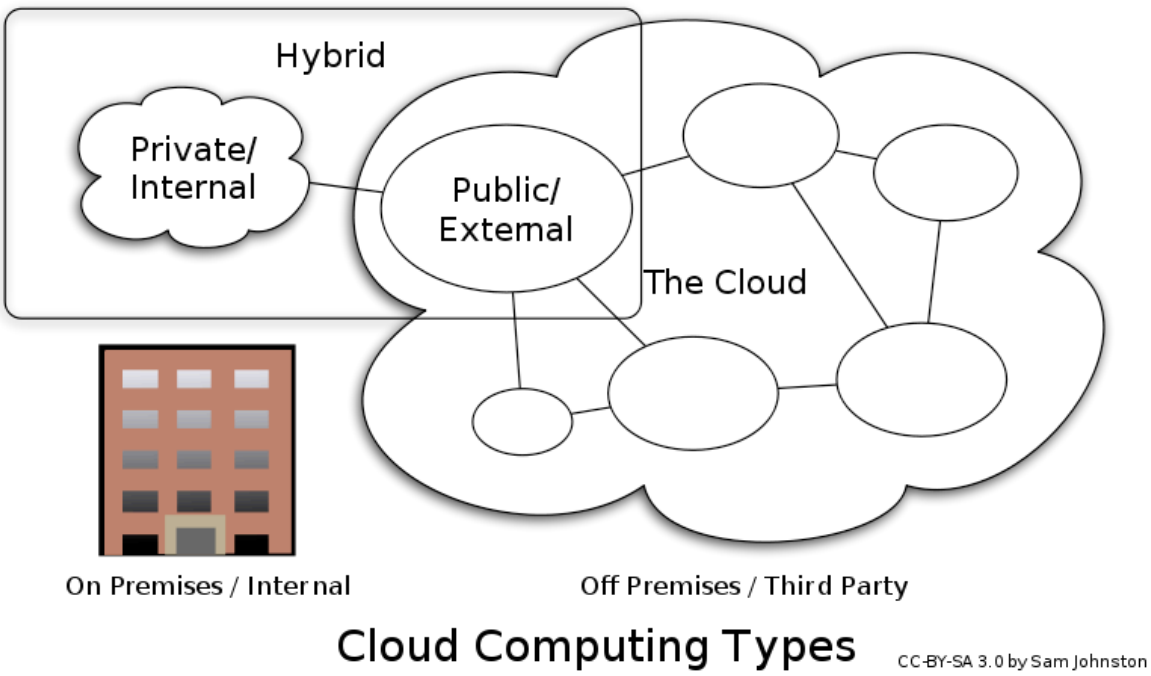
Clearly to acquire enterprise customers and to retain them means that Layerboom will have to ramp up both its sales and its marketing efforts. When comparing the eight KSF to the strategy map, one clear gap is that Layerboom currently spends no money on marketing. The highly competitive nature of the industry suggests that investing in marketing is necessary to acquire the customer base Layerboom needs to be successful.

The strategy question posed here is which target market to focus on. In the current situation, we are seeing evidence that all three camps (VMWare, Citrix and Parallels) are targeting the SME market. In each case,

1. VMWare has dropped pricing for its basic hypervisor tool. This is an attempt to attract more SMEs to us VMWare products. However, VMWare is simply shifting the cost from purchase price to maintenance price – in their new pricing, each support call will cost $300.
2. Citrix is starting to focus on “desktop virtualization”, which occurs when operating systems no longer sit locally. “Desktop virtualization” is the old idea of terminal stations brought back by faster server hardware; Citrix is targeting SMEs for providing full virtualized desktop solutions.
3. Parallels is betting that SMEs will not need to deploy any internal virtualization, and that instead SMEs will all become customers of hosting companies who are Parallels customers. Hence, Parallels is working closer with its existing hosting service providers in order to provide full application deployments. Ultimately this will allow SMEs to launch and use applications provided by hosts.

In the case of VMWare and Citrix, it is still assumed that SMEs will maintain some form of in house server infrastructure. VMWare and Citrix are aiming to provide the virtualization tools for these SMEs.

It is Layerboom's firm belief that ultimately, the long term vision is Platform-As-a-Service, meaning SMEs will simply deploy applications on a hardware less basis. However, it will take 15-20 years advancements in network and bandwidth allow realization of this end goal. In our efforts to get there it is clear that for the next 15-20 years we will go through the "hybrid cloud" phase.



The hybrid cloud means that SMEs will maintain top mission critical applications locally in their on premise servers , or database and production servers, while outsourcing test and development servers to the public cloud. Hence, moving virtual servers seamlessly between public and private clouds is one of the top feature sets.

With this in mind, Layeboom's product focuses on delivering the perfect product for the "hybrid cloud" solution.

The proposed strategy is that Layerboom should continue to focus on the SME target market as this represents the majority of firms and a largely untapped market. Indeed, VMWare, Citrix and Parallels have ignored this market in the past. Because we are only in year two of a twenty-year product life cycle, we predict that the final battleground for the winner in virtualization will be determined at the SME market.

Internal Analysis

Layerboom is a small company with a team of four employees and an $150,000 investment. Layerboom is challenging the status quo on a shoe string budget. To conduct a detailed analysis of the internal environment, we will deploy the Diamond-E framework.

3.1 Management Preferences

We will analyze three aspects of the management preferences in order to determine whether the strategy is in line with the strategic preferences of the KSF.

3.1.1 Decision Criteria

The main decision criteria for the Layerboom management team are cost and user based. Specifically, the decision criteria are whether the cost low is enough to extend a virtualization technology traditionally reserved for large enterprise customers to the SME level and whether it is easy to deploy, manage and maintain. The major concerns reported to the management team from industry analysts and customers are mainly regard cost and user experience. The most fundamental decision making criteria will involve how to bring to market a simple and cost effective system to virtualize existing infrastructure (even based on older generation hardware).

3.1.2 Capabilities

The existing CEO is a visionary leader who understands the knowledge of technology and has a passion for business. The existing CTO is a self-taught engineer that managed multiple data centers and has built Google data centers in the past. Together, the CEO and CTO founded Layerboom and have worked to bring the product to market in only eight months. However, Layer-

boom clearly has gaps in sales and marketing as the company neither has experience or personnel in this area nor the necessary channel partnerships for the distribution of its products. Thus, the first gap we are able to identify is

- **Lack of Sales and Marketing capabilities**

This key weakness directly has an impact on the KSF in that in this industry. Key integration on products are dependent upon partnerships and often channel distributions.

3.1.3 Mindsets

Due to the highly technical make up of the team, the management mindset has been more research and technical oriented than marketing based. This mind-set worked well for Layerboom while in its infancy, but now the mindset must shift towards one that is market driven.

3.2 Resources

For the purposes of this paper, this section has been sub divided into three areas. Financial, Human and Technological.

3.2.1 Financial

Layerboom was founded on May 4, 2009, with the two founders initial investment of $5,000 each. The next round of financing came from an angel investor in the amount of $50,000 in August, 2009. The last round of financing came from Bootup Labs in the form of $100,000 by November, 2009. Bootup Labs also provided a $50,000 investment in services, including office space, internet, phone, legal and accounting costs , etc. Overall, Layerboom's investment has been $160,000 cash and $50,000 in services. All four employees are paid an annual salary of $50,000 with no benefits. The monthly burn rate is around $20,000. In conclusion, the financial resource for Layerboom is extremely low.

3.2.2 Human

As Layerboom only has four employees, a short profile of each individual is provided below.

This profile is included so as to allow for better understanding of the Layerboom personnel.

1. Howard Wu

Degree: BA in Political Science

Age: 34

Title: CEO and Cofounder

2. Trevor Orsctynowicz

Degree: Associates Degree

Age: 28

Titel: CTO and Cofounder

3. Josh Wilsdon

Degree: BA in Philosophy

Age: 31

Title: VP Engineering

4. Kevin Chan

Degree: Currently attending BCIT

Age: 22

Title: Web Developer

From this brief profile, we can identify certain gaps in the company. First, there is a lack of experience; that is, with an average age of 28, Layerboom lacks the business experience necessary to compete against large enterprise customers as well as relationships.

Second, there is no sales or marketing experience in the current employee pool. As identified earlier, this lack of sales and marketing department and staff means that Layerboom has placed its focus primarily on product development and technology research. Third, employees lack track records – this is the first time either founder has launched a company in cloud computing. No track record of success means fund raising is extremely difficult in the VC world. Fourth, Layerboom lacks sufficient staff simply in terms of number. From the tech side, Layerboom needs more people to add secondary features to its product line to compete with VMWare and Citrix. As described earlier, Layerboom needs to build up a sales and marketing team to reach its target market of SMEs.

3.2.3 Technological Resources

The technological resources required at this stage are minimal: a few servers for internal test and a few public facing servers. These public-facing servers can be managed and deployed on existing cloud providers. Due to the rapid decrease in hardware cost, tech resources are now on a utility model and are easy to come by. As a very competent technical team that can build a wide variety of technologies, Layerboom is adequate on the technological resource side.

3.3 Organization

From an organization stand point, the company will need to evolve to solve some the gaps it currently faces. One of the biggest issues with the current organization is the lack of a sales and marketing department. This deficiency will need to be added to the organization as Layerboom ramps up its sales and marketing efforts.

3.3.1 Structure

Because Layerboom currently has only four employees, formal structure is almost none existent. The current structure consists of a highly technical core with the CEO managing everything outside the technical realm.

3.3.2 Systems

Because Layerboom is a start up, most systems were outsourced or were non existent. The accounting system is currently outsourced to part time accountants while most technical systems are being utilized on SAaS based web tools. Storage is done on public clouds that are available to general public.

3.3.3 Culture

Layerboom's company culture is in line with the new web mentality. The management style is that of letting developers be "rock stars". Management's job is to do everything else so that developers can focus on what they do best, developing awesome products.

One of the major gaps between current company culture and the sales and marketing gap is that due to Layerboom's highly technical staff and culture, it doesn't have a marketing culture, rather one of product innovation.

3.4 Summary

We find there are several gaps between the company's current resources and strategy, however, none of these gaps are severe enough for a change in strategy. What Layerboom should focus on doing is gathering resources or solving the gaps it currently has so as to bridge itself to implementing the strategy.

Recommendations

The purpose of this final chapter is to provide recommendations as to how to execute the strategy by closing the gaps identified through this paper. Given Layerboom's startup nature, recommendations will be based on two areas: first of all, the target market and second of all the financial options. The target market strategy recommendation will assume that certain resources (in particular financial resources) are not a concern, and will be based on which market Layerboom should focus on for its product. The financial options recommendation is based on the fact that Layerboom is currently evaluating whether to raise additional angel funding, Venture Capital funding or become acquired. We will take a quick look at the different options and make a recommendation.

4.1 Target Market Strategy

Layerboom's current target market of SMEs should remain intact, given that VMWare and Citrix largely occupy the enterprise space. However, as discussed previously, the sales and marketing gap in Layerboom is a strategic concern. Below are the recommended action items to close this gap.

1. Hire a VP of Marketing/Channel partnerships

The VP of Marketing/Channel will need to have a number of qualifications. The VP will have to take the initiative in learning about Layerboom's product and will need to provide strategic part-

ners and customers. Layerboom has not yet decided on whether to go with a direct sales model or a channel partnership model; the VP of Marketing will be a valuable resource in determining which sales method should ultimately be implemented.

In terms of performance expectations, the VP of Marketing will need to build up

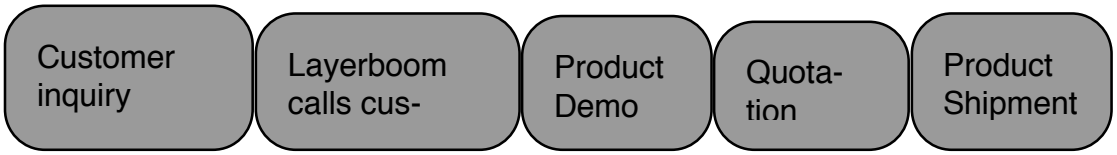
2. Hire a VP of Products

The VP of Products will need to take on the following responsibilites: the VP will take on the responsibility of the product life cycle, product development as well as managing customer expectations and strategic partnerships with the VP of Marketing.

In terms of performance expectations, the VP of Products will need to build up

3. Automate the logistics

The current product sales process is done fully manual and the process flow is depicted below.



Most of these processes can be fully automated and can therefore be cut down.

4. Marketing Blitzkrieg

The Marketing campaign should have several key components which are listed below.

A. Communicating the right values to SME decision makers.

By providing a set of values that appeals to SME decision makers, Layerboom can hone in on the target market and provide the right key words to generate the right image to the Layerboom brand.

B. Attend the appropriate trade shows.

Attending trade shows will provide exposure to the core group of technical and business decision makers when they have to answer to their board on what is their virtualization strategy. Layerboom needs to convey the right image by hosting booths at trade shows and appearing guest speakers.

C. Partner with hardware vendor to provide support on logistical side.

So far, HP, Cisco and Dell have all contacted Layerboom to seek a partnership. All hardware vendors are currently held hostage by VMWare's pricing and dominance in the market place. Hence, HP, Cisco and Dell are all seeking a VMWare replacement in a partnership or proprietary manner.

In summary, the target market strategy of focusing on SME is a correct one - what is lacking is the necessary talent and resources to execute the plan. To close the gap in a rapid manner, Layerboom either needs to learn very quickly on its own or needs to partner with the right firm. This process ties into the financing options strategy.

4.2 Finance Options Strategy

1. Angel Funding

A local Vancouver Angel with both industry connections as well as deep pockets has offered to fund Layerboom indefinitely. This funding will allow Layerboo to continue operations with funding of $600,000 to be vested at Layerboom's discretion. The last project this angel funded was worth well over $7 million, so the commitment level of this angel can be confirmed based on their past behavior. One substantial benefits with this angel is that he is very well connected within industry, so he would be more than just a cash provider. The downside, is that the founders would get heavily diluted in the process and a likely exit would have to delay further.
The $600k investment will allow Layerboom to double its staff size while ramping up its sales and marketing efforts.

2. Venture Capitalist Funding

Layerboom has been in touch with numerous Venture Funds since it's establishment and has created a great deal of interest from various VCs. Below is a list of all VC funds Layerboom has been in touch with.

	Tier 1	Tier 2	Tier 3
Sequoia			
Accel			
Lightspeed			
Norwest Ventures			

	Tier 1	Tier 2	Tier 3
Battery Ventures			
Edgestone			
Yaletown Ventures			
Growthworks			

3. Acquisition

For the last six months, Layerboom has been in touch with three potential acquirers. The three are listed below:

1. Barracuda Networks

Profile:

Barracuda Networks is a privately held company providing security, networking and storage solutions based on appliances and cloud services. The company's security products include solutions for protection against email, web surfing, web hackers and instant messaging threats such as spam, spyware, trojans and viruses. The company's networking and storage solutions include web filtering, load balancing, application delivery controllers, message archiving, NG firewalls, backup services and data protection.

Sequoia Capital and Francisco Partners fund barracuda.

As of 2010, Barracuda has over 100,000 customers.

Strategic Fit:

1. Complimentary Product. All of Barracuda's products are related to web security, ranging from spam filters or instant messaging archives. Barracuda focuses its business on security. By acquiring Layerboom, this would push Barracuda into one of the hottest sectors today. Furthermore, Layerboom's appliance model is consistent with Barracuda's own appliance model.

2. Same Target Market. Barracuda enjoyed tremendous success in the SME market by selling directly to businesses and providing them with a free 30 day trial on all products. The core competency Barracuda acquired was in logistics and turn around time. For example, within five minutes of Barracuda receiving an email message requesting a demo unit, a sales rep will be on the phone taking down customer information including credit card information. The unit requested is then shipped out on FedEx overnight and the customer will receive the unit by the second day. Once the customer receives the demo unit, the 30 day free trial period starts. Historically, the returns on free demo units have been less than 10%. This means that every appliance Barracuda ships out is essentially cash. The over 90% retention rate also helps Barracuda in not keeping stock; this is beneficial as most appliance product companies have to deal with an industry average return rate of 50%.

Cons:

Barracuda's business model is what I would characterize a Chinese company running in North America. The business model is strikingly similar to how family businesses are run in China today in the way senior management manages people. The biggest con would be the different cultures and values that Layerboom and Barracuda have; this could lead to substantial arguments in the future.

3. Joyent

Profile:

Joyent is a privately held company that was founded in 2004. Joyent's business focuses on providing public cloud services to Solaris users. The advantage of Solaris lies within its ZFS file system. The container technology enables Joyent to squeeze in more customers per physical

server than competing true virtualization public cloud service providers such as Amazon Web Services. Joyent currently has approximately 35,000 customers.

Strategic Fit:

1. Layerboom gived Joyent the ability to provide Linux and Windows servers on the public cloud. Joyent's current product offering is based on Sun Microsystem's Solaris OS. Because Sun was recently acquired by Oracle, this has a huge impact on Joyent's entire business model. By acquiring Layerboom's technology based on KVM, Joyent could also offer Linux and Windows based servers. The majority of the market uses these servers, and this would move Joyent from a niche cloud provider to one that can compete with Amazon Web Services.
2. Joyent has partnered up with Dell to provide prebuilt Private Cloud stacks. However, Joyent's own software limits users to Solaris based solutions only and was not built with private clouds in mind. Layerboom's appliance product, on the other hand, is a perfect fit for this Dell initiative.

Cons:

Joyent is relatively young compared to both Barracuda and Cisco. Since Joyent only started in 2004 and is therefore still in its infancy, there are more uncertainties within the organization and the direction it wishes to take.

3. Cisco

Profile:

Cisco Systems is a Multinational corporation that designs and sells consumer electronics, as well as networking and communications technology and services. Headquartered in San Jose, California, Cisco has more than 65,000 employees and annual revenue of $36 billion as of 2009. Cisco is one of the world's biggest technology corporations.

Strategic Fit:

1. Network expertise. Layerboom's appliance product is a network bootable appliance, which means it can fit with Cisco switch and routers to provide a complete networked private cloud product.
2. Brand. Cisco has an alliance with VMWare and EMC (the parent company of VMWare) which dominates the enterprise market today. However, its price point has been historically too high to allow SMEs to purchase and utilize their products. By acquiring Layerboom, it extends the reach of this alliance to the SME level and will be able to further saturate the market with a mature, proven virtualization solution.

Cons:

Cisco is an enterprise firm. As such, efficiency and speed to market are expected to slow down, this creates a conflict with the Layerboom culture of a startup mentality and a get things done attitude. Most importantly, if an acquisition was to be completed, it would take a long time and Layerboom product might lose the time to market advantage.

Recommendation:

Given Layerboom's limited resources as a relatively un-proven team and being located in Canada, if Layerboom was to grow its business by way of angel it will be an uphill battle. If Layer-

boom was to take VC funding, challenges of moving will still arise and VCs will more likely have higher demands on the stucture of the LayerBoom management team. Therefore, the best option for the Layerboom team is a complete a rapid acquisition. The acquisition will do three things for Layerboom.

1. Provide an instant sales/marketing solution with a mature product pipeline.
2. Provide the Layerboom team instant financial and optical success.
3. Enable the appliance a real chance to hit the market.

The first benefit, provide an instant sales/marketing solution with a mature product pipeline, is probably the most important when compared to raising additional funds from angels and VCs. By being acquired by any of the three potential acquirers, Layerboom has teamed up with an established industry veteran and will be able to sell its boxes.

The second and third benefits, (to provide the Layerboom team instant financial and optical success and to enable the appliance a real chance to hit the market), are mainly for resource purposes. As the “Cloud” battle heats up and different start ups come up with different ideas on how to manage and use cloud technologies, it is inevitable that industry consolidation occurs. Another reason for Layerboom to be acquired is that although Layerboom has gained a relative advantage by developing KVM tools early, currently there are approximately 10-15 other start ups doing similar features as Layerboom. It is conceivable that a “Cloud” cliff is coming in the investment arena and investment will soon dry up.

Given the current uncertain environment, it is in Layerboom's best interest to quickly team up with a larger organization that can provide the tools, marketing dollars and other resources so the product gets a fair shot in the market place.

Layerboom started with a dream of changing the way humans and computers interact. Today that dream remains alive and well. Now the only thing left for the Layerboom team to do is to continue on its blazing trail in a cost based innovative manner to deploy virtualization.

Works cited

Work Cited

Armbrust, A., Fox, A., Griffith, R., Anthony, D., Katz, R., Konwinski, A., Lee, G., Patterson, D., Rabkin, A., Stoica, I and Zaharia, M. (2010). A View of Cloud Computing. *Communications of the ACM.* April 53(4): 50-58.

Buyya, R., Pandey, S., and Vecchiola, C. (2009). Cloudbus Toolkit for Market-Oriented Cloud Computing. *CloudCom*, LNCS 5931, pp. 24–44

Buyya, R., Yeo, C.S. and Venugopal, S. (2008). Market-Oriented Cloud Computing: Vision, Hype, and Reality for Delivering IT Services as Computing Utilities. *High Performance Computing and Communications, 2008. HPCC '08. 10th IEEE International Conference;* September 25-27 (5:13).

Buyya, R., Yeo, C.S., Venugopal, S., Broberg, J. and Bradic, I. (2008). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility. *Future Generation Computer Systems*; December(1-18).

'Cloud computing' seen as the future of computer technology. *Executive Brief Technology Management Resource for Business Leader*. Web Page accessed on 11/14/2010: http://www.executivebrief.com/news/cloud-computing-seen-as-the-future-of-computer-technology/.

Gillet, F.E. (2008). Future View: The New Tech Ecosystems Of Cloud, Cloud Services, And Cloud Computing. *For Vendor Strategy Professionals*. August 28, 2008.

Beltrame, F. and Koslow, S. (1999). "Neuroinformatics as a megascience issue". *IEEE Trans. Inf. Technol. Biomed. 3* (Sept): 239–240.doi:10.1109/4233.7885.

http://en.wikipedia.org/wiki/Neuroinformatics. As accessed on 11-20-2010.

Moore, G.E.; , "Progress in digital integrated electronics," *Electron Devices Meeting*, *1975 International* , vol.21, no., pp. 11- 13, 1975
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1478174&isnumber=31745 accessed on 11-20-2010