Red Hat And the Five Forces Model:

An Analysis

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Introduction

Created by Linus Torvolds, a Finnish graduate student in 1991[1], Linux is a Unix-based operating system (OS) for computers. Since 1991, Linux has grown to be the Unix "flavor" with the largest market share. Despite this dramatic growth and associated fanfare, Linux has yet to make significant inroads in the desktop market, holding only about 2% of this market according to a recent survey[2].

Founded in 1994 as a producer of a Linux distribution (distro), Red Hat is the largest and most recognizable Linux-focused company. Due to the nature of the GNU Public License[3] (GPL), Red Hat is unable to make very much profit from selling their Linux distro. Instead, they focus on value-added products such as support, consulting and complementary products including proprietary software.

As the largest company in a nascent segment of the industry, Red Hat is poised for growth. Herein is provided an analysis using the Five Forces Model to better explain where Red Hat lies within its environment.

Analysis

Threat of Entry

The operating system market is both monolithic and fragmented at the same time. Monolithic due to the monopoly Microsoft holds on the desktop market which helps to extend its power to other markets such as the server and handheld market. Fragmented because, outside of the desktop market, Microsoft is often the largest or second largest player but does not hold monopoly power[4]. As a result of these dynamics, there are very high (some would say insurmountable) barriers to entry in the desktop OS market but much lower barriers to entry in other markets and, for a Linux distribution, the barriers to entry are very low.

Economies of scale

The economies of scale found in the software industry are very small. This is due to the very low cost of production once the software has been developed. Cost per unit ranges from virtually nothing (download) to a small amount for production of boxed CDs. Very little advantage is seen in large scale production over small runs. This lack of economies of scale presents a very small barrier to entry for competitors to Red Hat.

Product differentiation

Due to the GPL, there are few differences between Linux distros and new features rapidly propagate between distros. Linux distributor's methods of differentiation typically include support, marketing and niche-market targeting.

Within the Linux community, there are about 13 major distros[5]. Due to their structure (i.e. a for profit company[6]), size and marketing efforts[7] and by offering the highest levels of product support, Red Hat is the most recognizable distro of Linux around the world.

Cost disadvantages independent of scale

It has been estimated that the cost to develop the Windows 2000 operating system was one billion dollars[8] - a very high barrier to entry for a closed-source OS developer. Microsoft, as any closed-source OS developer, must sell a large number of licenses to recoup these costs. A benefit of the GPL is that a particular Linux distro has none of this overhead and can charge much less for a copy of their OS.

Even with this cost advantage, due to the portability of computer code and the GPL, earning revenue from Linux is extremely difficult. Red Hat has not found a single "magic bullet" to work around this. Rather, they have slowly evolved numerous solutions to generate revenue. Most of these solutions are based around three major methods of revenue generation: selling of services[9] related to the OS, partnering with other companies and, selling of proprietary software which runs best on Red Hat Linux.

Government policy

There is no direct government regulation of the software industry. Indirectly, numerous government actions have had large impacts on the software industry over the years. Much academic research into programming, out of which most OSes have developed, is funded through government grants. Also, in recent and ongoing actions, the Department of Justice (DOJ) has determined that Microsoft holds a monopoly in the desktop OS market. Government actions related to the DOJ findings could potentially be a boon to Linux distros with Red Hat leading the way.

Capital requirements

Traditional tangible assets such as plants and machinery comprise only a very small part of the cost structure of Red Hat. Their capital resides in intangible assets such as patents, computer code and the knowledge base of their employees. Similar to service industries, the capital requirements to become a Linux distributor are very small. For the cost of a few high quality programmers, an organization could easily begin a very similar venture as Red Hat and the profusion of Linux distributions[10] is testament to the low capital requirements.

Other sources

Due to the network effect (Metcalfe's Law)[11], it is extremely difficult for a new operating system to gain entry to any established market. This barrier is greatly reduced within the Linux market due to the similarity of each distro. The larger barrier is not for any single Linux distro but, rather, for Linux in general to gain access to the desktop market. Great strides have been made in this area[12] but have far to go.

Threat of Substitution

With 13 major distros and over 305 distros total, there is a large threat of substitution to Red Hat's distro. What is much more difficult to substitute are the services Red Hat offers. There are many very small organizations which provide Linux-focused services but few large ones and, none as successful as Red Hat.

Bargaining Power of Buyers

By differentiating themselves through marketing, quality and service, Red Hat has successfully differentiated themselves from competitors. The perception that they offer a superior product gains them power when bargaining with buyers of their product. But, due to the nature of open source, Red Hat must maintain this image to retain their price premiums in this competitive market.

Bargaining Power of Suppliers

Red Hat has essentially no suppliers. They take (and develop) a raw material (Linux) and package it with various other services and software to add value.

Rivalry Among Current Competitors

There are two classes of competitors to Red Hat. First is the monolithic Microsoft which controls or is a leader in most OS markets. Second are the numerous other Linux distribution organizations. Although competitors, a Davids-vs-Goliath mentality is shared by many Linux organizations; there is a general environment of cooperative competition among Linux distributors. Linux distributors recognize that their biggest challenge is not each other but the total Linux market size – which, outside of the server niche, is very small and ripe for growth.

Conclusion

Red Hat, one of the first commercial Linux distributors, has grown to become the largest and most recognizable distributor. Due to the GPL, no Linux distributor can prevent other entrants to the market through manipulation of the OS – a tactic long favored by Microsoft in their dominance of the desktop segment. This forces Linux distributors to compete on features other than the OS. Support and services, two of the features commercial Linux distributors compete on, are intangibles. They are not as easily compared to one another as the speed of a CPU or the horsepower of a car engine. Also, due to the youth and small size of the Linux segment in the overall OS market, competition between Linux distributors is best characterized as friendly competitiveness: we do not see advertisements of one Linux distributor claiming their distro is better than another; what we do see are Linux distributors extolling the virtues of Linux over other OSes including proprietary Unix variants and all Microsoft OSes.

As the largest, one of the oldest, and having a very well recognized brand, Red Hat is very well positioned to benefit greatly as Linux continues to develop and grow in the numerous OS market segments.

Notes

[1] For a good history of Linux written by Linus himself, see
http://www.li.org/linuxhistory.php

[2] For many dated (1999) but interesting statistics, see
http://www.mc.edu/campus/users/bennet/dontfear/index.html

[3] The GPL allows anyone to modify the source code in any way they wish as long as they
contribute their modifications back to the community.

[4] See http://www.netcraft.com/survey/ for recent statistics on server OS market share,
http://www.allnetdevices.com/wireless/news/2001/10/12/palm_os.html for recent
handheld OS market share figures,
http://www.asisinc.com/embeddedosmarketshare.jpg for the embedded OS market
share as of 2000 and http://slashdot.org/article.pl?sid=01/12/20/0514203&mode=thread
for an interesting discussion on desktop market share.

[5] See http://www.linuxplanet.com/linuxplanet/reports/1266/1/

[6] There are non-profit organizations who also make Linux distros, the Debian distro being
the best known.

[7] Red Hat enhances their image and actively "gives back" to the Linux community by
employing numerous Linux developers including Alan Cox, one of the lead kernel
developers. Also, by doing the development, they are often able to stay a half step
ahead of their competition.

[8] See http://www.zdnet.com/windows/stories/main/0,4728,2595272,00.html for the
development cost of Windows 2000.

[9] Several companies have taken this route including Zope Corporation which makes
Zope, an open source content management and layout tool which competes directly
with Cold Fusion, a proprietary product by Macromedia.

[10] "It appears that there are about 350 distributions available online" see
http://www.elinux.com/articles/distros/index.jsp

[11] See http://www.killer-apps.com/contents/booktour/metcalfes_useful_equation.htm

[12] There are several software solutions available to allow Windows and Linux to coexist
on the same computer. Examples include Win4Lin, Lindows, and WINE.