How to Buy Virtualized Network Software: Observations from the Market

Michael Howard,
Senior Research Director & Advisor,
Carrier Networks
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>What Operators Expect from New Ways to Buy and Consume Software</td>
<td>1</td>
</tr>
<tr>
<td>What Vendors Want and Need</td>
<td>1</td>
</tr>
<tr>
<td>Consumption Models—Some Old, Some New</td>
<td>2</td>
</tr>
<tr>
<td>Moving From Simple, Well-understood Models to More Complexity</td>
<td>2</td>
</tr>
<tr>
<td>Bottom Line</td>
<td>3</td>
</tr>
</tbody>
</table>
Introduction

Over the past 2 years, I’ve been talking to operators and vendors about how they’re going to buy, consume, and sell software and hardware going forward. I usually get only general answers from vendors, and I reported some of these options for vRouter software in a series of client notes in 2014-2015. But to be fair, consumption models are certainly in a state of flux or, better said, are developing along a number of tracks, each to serve a different purpose or satisfy a service provider need.

What Operators Expect from New Ways to Buy and Consume Software

Carriers expect that the move to more software control will mean a reduction in spending, whether in capex, opex, or both, coupled with a shift of capex to opex or some new model where the vendor shares the risk of developing/deploying a new service in exchange for a portion of the service revenue. In my discussions with operators, they expect a 20-30% reduction in hardware/software spending when the full effect of SDN/NFV is felt. This is not the case today, where the norm is increased investments in time, resources, process change, organizational restructure, network re-architectures, learning what works and what doesn’t, learning what customers expect, outsourced services, and much more.

A further dose of reality: though the operator CTO and product managers may ask for a risk-sharing, revenue-sharing model, when the purchasing department at some operators gets involved, this model may get thrown out because consumption-based models require the operator to reveal data about true consumption or revenue—something the company may not have agreed to do. Culture change has to spread from the operator’s CTO to the procurement department.

What Vendors Want and Need

Vendors are interested in maintaining revenue growth and margins; however, I believe competitive pressures will force them to aim for lower revenue but with consumption models that retain margins. The simplicity of the existing agreements for hardware/software purchases plus annual maintenance fees is melting away to a complex set of options. It’s all up in the air now—there are no standard industry models or practices, but there is a lot of experimentation going on.

Exhibit 1 – Software Consumption Model Options

- Term license (capex)
- Perpetual license
- SaaS
- Risk sharing, revenue sharing
- Co-development
- OpenSource software

Term or duration

- Lifetime purchase
- Term lease
- Pay per usage

Units or pooled units

- Sites
- Users
- Simultaneous users
- Servers
- VMs
- Simultaneous VMs
- Containers
- Simultaneous containers

Operator-Vendor involvement

- Arms-length transaction, simple purchase
- Negotiated standard models
- Cooperative model development
- Trial model when revenue unknown
- Automated contracts: choose options

Volume discounts

- Pay per use
- License stacks
- Elastic pricing
- Auto scaling pricing
- On-demand, real-time change in license agreement

Model
Consumption Models—Some Old, Some New

Here’s a look at 6 different, fairly common consumption model approaches:

- **Term license:** this common approach enables users to purchase software for a specific period of time, which impacts a service provider’s capex.

- **Perpetual license:** a fairly common approach in terms of leasing software. Because it’s a charge to opex, it makes a significant difference (versus outright purchase or term license) in not just the pricing but the carrier accounting involved. The license cost basis factors vary widely. Common methods use the number of users or simultaneous users, the number of computer/servers, the number of streams supported, or the number of simultaneous VMs. Then, of course, there are various forms of bulk discounts. Some operators have license deals where the network service (or function) may initially be on a physical appliance, but the license is transferrable to a VNF.

- **SaaS:** this is another opex approach in the strategy of many vendors, many of which indicate they’re going to offer all their software in a SaaS model—Cisco and Oracle among these. vRouter software is usually offered as part of an application software solution as opposed to pure vRouter SaaS.

- **Risk sharing, revenue sharing:** another approach to the consumption model is where the manufacturer takes the risk and expense of integrating hardware and software for a specific service, such as an operator’s managed firewall service offered to their enterprise customers. Though the vendor might receive some of the money at the start (sometimes structured as an engineering fee), the real vendor payback comes in terms of revenue sharing when the operator starts taking in revenue for that service.

- **Co-development projects:** much like how teams work in DevOps mode, where they cannot completely define the scope or outcomes at the onset, this new model is frequently used with web scale companies and with operators for development of SDN and NFV orchestration software, where both parties own the resulting software. Many times, these projects set the stage for further co-development projects and provide the vendor the basis for future software products. The problems these companies face is that they don’t know exactly what they need, so vendors need to work with the customers in an agile development/DevOps environment to quickly create what is needed. These co-development projects are key to moving the industry forward, keeping pace with the speed of technology.

- **Hybrid:** a combination of any of the other 5 approaches.

Moving From Simple, Well-understood Models to More Complexity

The good old way of buying network infrastructure has been changing for years. The simplicity of buying network hardware and getting most software included is rapidly disappearing, and it needs to disappear in order for the software to be recognized and valued appropriately. Most carrier network projects involve some professional services, but virtually all SDN/NFV projects involve a healthy dose of professional services to develop the new software-driven environment, so in these projects, it’s not simply hardware and software.

The models I’ve outlined above are just the starting line as each has plenty of options. Take “units” for example: units can be per user, computer, processor, core, capacity/bandwidth, simultaneous users, simultaneous flows, VM, container, site, and more. Not to mention units can be counted by time period rather than being an ever-increasing count.

Subscriber/bearer licenses are generally perpetual, and many carriers have negotiated for these licenses to span the transition from hardware to software VNFs—for example, in the case of mobile packet core. This model is also in use for subscriber management and is one way that equipment vendors have started
to monetize software. Another is in feature licensing: buy a card for a router or switch then pay to unlock features. For example, a card comes with base Layer 2 working then the operator buys licenses to unlock Layer 3 functions or unlock various levels of scale. All of these models necessitate a mechanism to “lock” and/or “unlock” functionality. Some visionary vendors have built this into the code from scratch. Network management systems have typically had some capability along these lines. Many other systems do not, and in probably too many instances an "honor system" is used. Moving forward, adding this capability has become required but is tough to prioritize vs customer features in R&D planning.

A huge challenge is how to manage and how to set a contract in an environment of “on-demand“ services, with a service provider’s customers coming on and off the system. Does the provider pay for a block of licenses and add more as required? Or does it pay only for licenses in use? What is the model going forward? Or, in reality, what are the models going forward? There are many questions to answer!

And let’s not forget the big customer and volume discounts based on a table of contract spending levels, spending levels per category or region, or the level of any number of those units—and these can all be based on duration/years of the contract.

Then there is the problem of how to track accurately and in real time (for “simultaneous” type metrics) what is to be charged for the month and how to provide proof to the vendor. And in all of this, how is the operator to know if they are getting a good deal? How can the vendor figure out at contract proposal time and during the contract what revenue and margins they will make? These issues are exacerbated in the risk-sharing, revenue-sharing model. These are a few of the issues involved in developing new consumption models.

**Bottom Line: Complexity and Unknowns in Consumption Models Are Tough on Vendors and Operators**

There is no stopping the train: software and virtualization will play a larger role in service provider networks each year going forward. There already exists a wealth of consumption models/options, yet new consumption models are necessary—underpinned by the reality that the value in software must be monetized separately from hardware and virtualization makes consumption dynamic. Solving the consumption model issue will be a top issue in 2017 for achieving the agility and automation goals of this unprecedented transformation. But much of it is new, experimentation rules the day, and there are many, many unknowns.

Service providers and their vendors can take a page from the off-premises cloud services playbook, which over the last 5 years has developed a rich set of variable consumption models and tools to allow service providers to measure and control costs and vendors to bill for value provided. But the environment of data centers and DC services is simple compared to service provider networks and services.

I’ve talked with a few vendor execs responsible for designing new consumption models, and they are very nervous sitting in a hot seat—in fact, one of the hottest seats in the industry right now, responsible for margins on contracts with models that have no track history. It will take 2-3 years for common practices for consumption models to solidify.

Meanwhile, my recommendation to more than one operator in this past year has been to not sign any long-term contracts with new consumption models as it will be hard to know if better models or terms will emerge in the next year or two. It’s an exciting time of change, and I’m glad I’m the observer and the messenger, not the exec sitting in the hot seat.
Report Author

Michael Howard
Senior Research Director & Advisor, Carrier Networks
michael.howard@ihsmarkit.com
+1 408.583.3351
Twitter: @MichaelVHoward

To Learn More

Join us for “How to Buy Virtualized Network Software: Observations from the Market” a free webinar presented by IHS Markit and VMware:

LIVE: Thursday, February 16, 2017
8:00 AM PT, 11:00 AM ET, 16:00 UTC

REPLAY: Watch on-demand any time

Both the live event and replay can be accessed at: http://event.on24.com/wcc/r/1345497/EC81A3F53D250DA238CE025E924A5DBF?partnerref=PC9415IHS

For more information

technology.ihs.com Follow the conversation @IHS4Tech

About IHS Markit

IHS Markit (Nasdaq: INFO) is a world leader in critical information, analytics and solutions for the major industries and markets that drive economies worldwide. The company delivers next-generation information, analytics and solutions to customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions. IHS Markit has more than 50,000 key business and government customers, including 85 percent of the Fortune Global 500 and the world’s leading financial institutions. Headquartered in London, IHS Markit is committed to sustainable, profitable growth.

Copyright © 2017 IHS Markit. All Rights Reserved