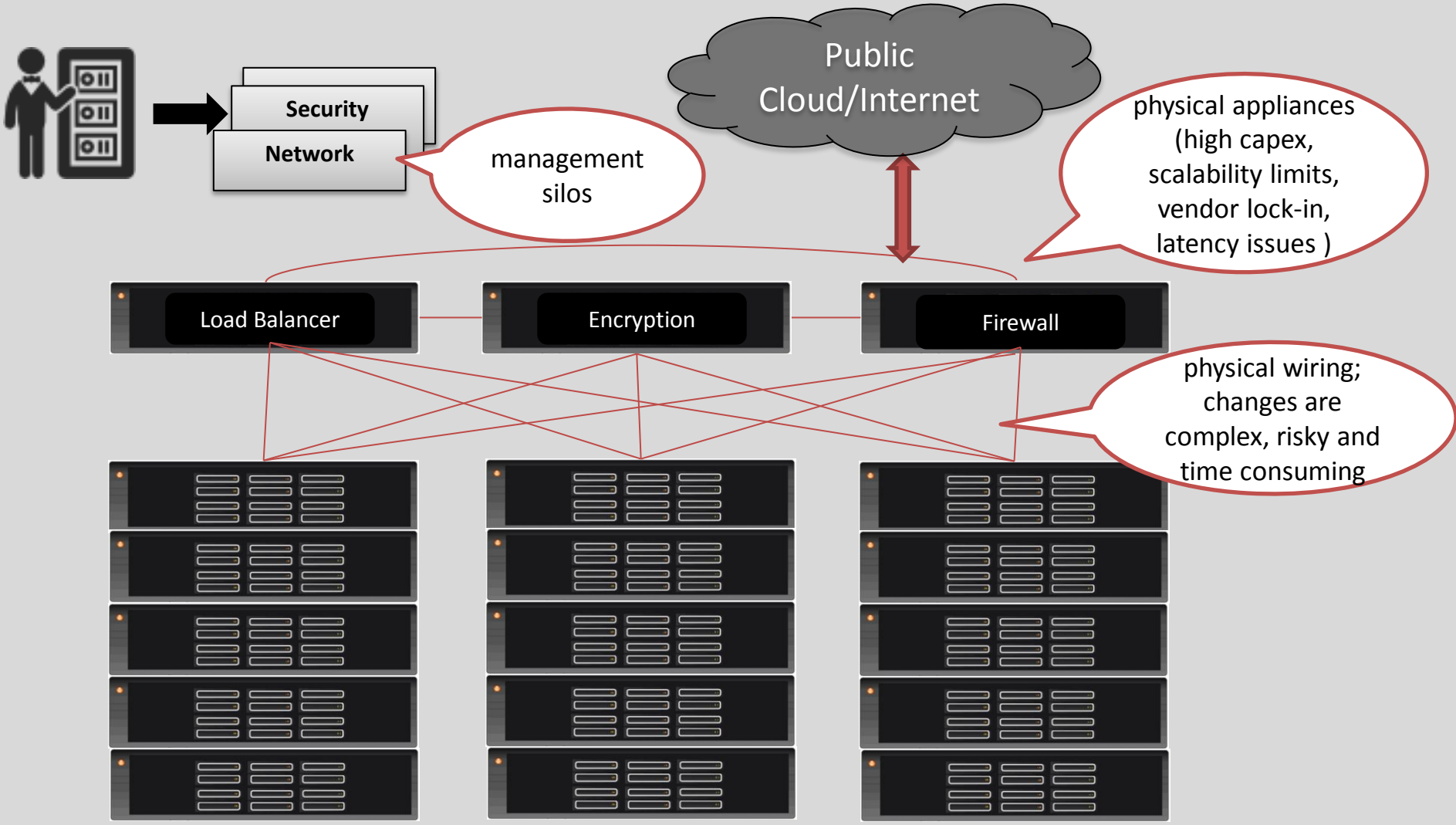
SmartToR

Lavelle Networks

Problem: Anatomy of a datacenter today, for network services



Problem: Network services don't scale with the network…!!!!

- ✓ More and more traffic needs to be hauled back and forth across racks, across data centers between the fast transport (switches and routers), and the slower network appliances

- ✓ But, network appliances built using dedicated hardware or virtualized instances are not able to deliver required scale, performance, cost and manageability

- ✓ To make things worse, data centers are adding more tenants, more servers, more network ports….more bandwidth

Problem: Network Services nightmare is worsening day by day

Exponential growth in need for Network Services

With Service Oriented Architecture (SOA), applications are decomposing to a collection of services; with each service needing load balancing

Network perimeter erosion

Firewalls are no longer just perimeter devices for the data center, but need to be weaved into the platform of the network offering ubiquitous security

Encryption everywhere

Bursting to public clouds, means more secure connectivity is needed between locations, services and applications

Ubiquitous access control and logging

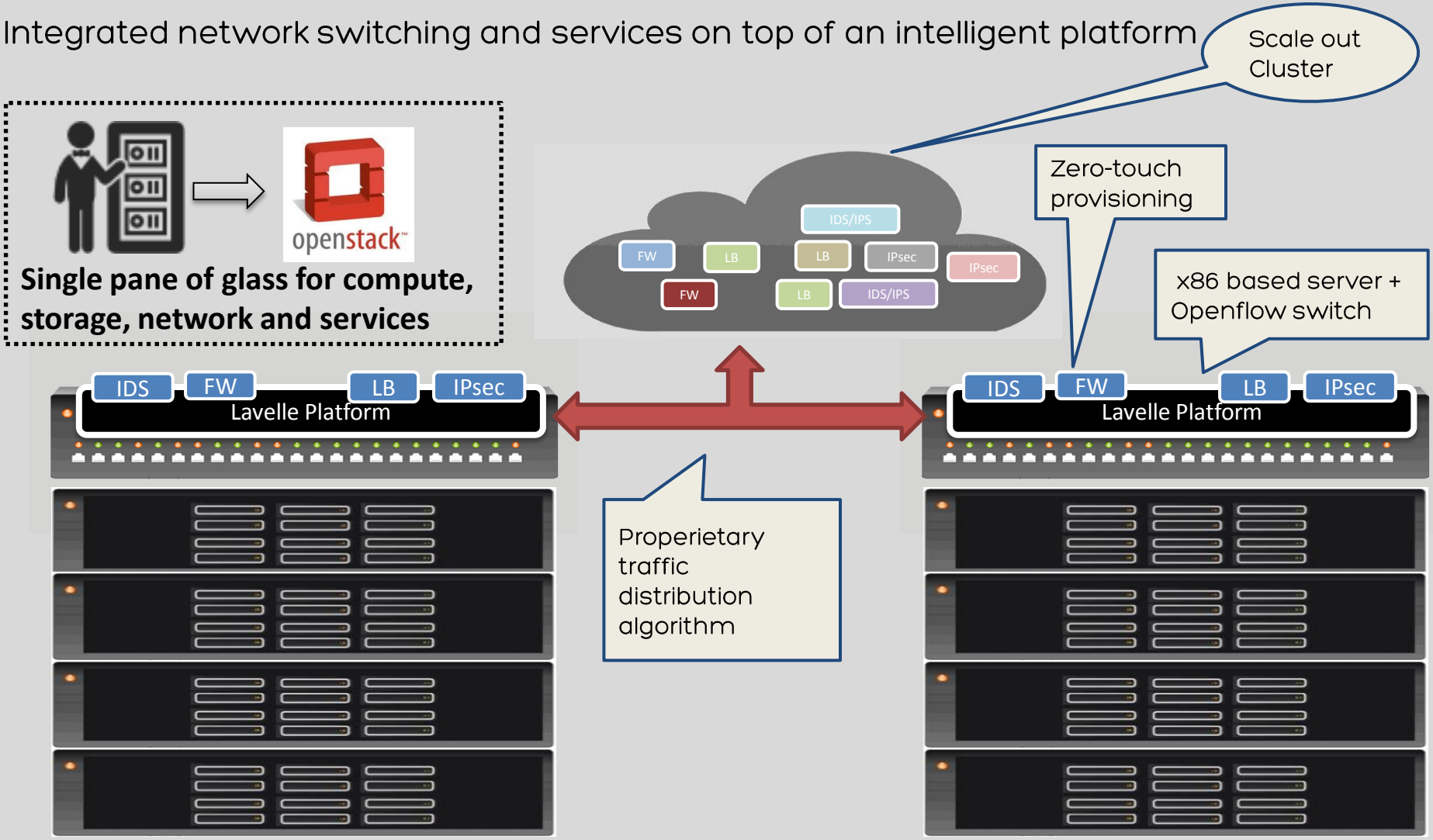
Regulatory compliance (SOX, HIPAA..) means more and more traffic needs to be inspected for tracking user and network activity.

Solution : The Lavelle Networks '*SmartTor*'

- ✓ Distribute network intelligence at each Top-of-Rack (TOR) switch, using off-the-shelf CPUs
- ✓ Distributed software network appliances which scale using modern cloud based technologies
- ✓ Preserve investment by running incumbent 3rd party network software on Lavelle solution

Solution: Integrates with the existing environment

Integrated network switching and services on top of an intelligent platform



Solution: Key Differentiators

- Low Latency, High Performance combined switching and services platform for top of the rack switching and service chaining of L4-L7 network services

- Makes it trivial to deploy advanced network services.
  - Deploy Lavelle, Open Source and Third Party network services with the ability to chain these services
  - Lavelle will offer complete solution with OpenStack

- Services don't need to be distributed; the Lavelle platform will cluster them.
  - Patent-able algorithms

- Universal Service Engine
  - The platform provides a powerful & fast (line rate) scripting engine (supports Python) in the network data plane.
  - Allows customers to define and write their own service logic for firewalls, load balancers, and encryption services

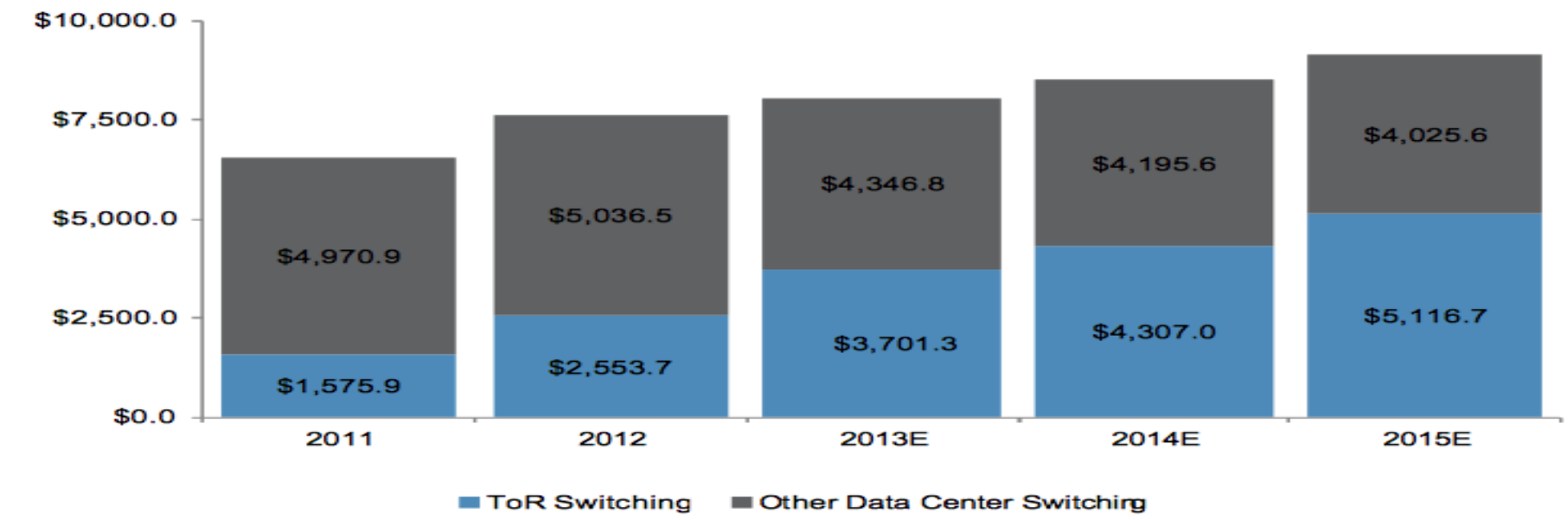
Solution: Leverage current Market & Technology Inflection

- ✓ Cost for intelligent packet processing in commodity hardware has fallen to ~ 100 USD per 10 GbE port (*Eg; a 4-core Intel CPU can handle 20 Gbps of traffic and costs around 200 USD)*
- ✓ Every year, server network ports, switches, routers are becoming faster, cheaper, simpler, scalable…..
- ✓ Mature compute orchestration software now available using OpenStack, extend that for service orchestration as well
- ✓ Combining x86 processors with TOR switches, enables us to access a billion USD or more market potential

Market Size

1. ToR switching market will rise to $5.1 Billion in 2015 from $2.6 Billion in 2012 for a 26.1% 2012-2015 CAGR [1]
2. NFV (L3-L7 Network Services) Market will grow at a CAGR of 46% between 2014 and 2019. NFV revenues will reach $1.3 Billion by the end of 2019.[2]
3. Lavelle addressable market is ~$5.5 Billion by end of 2015

Figure 15: ToR Switching Fuels Data Center Switching Growth



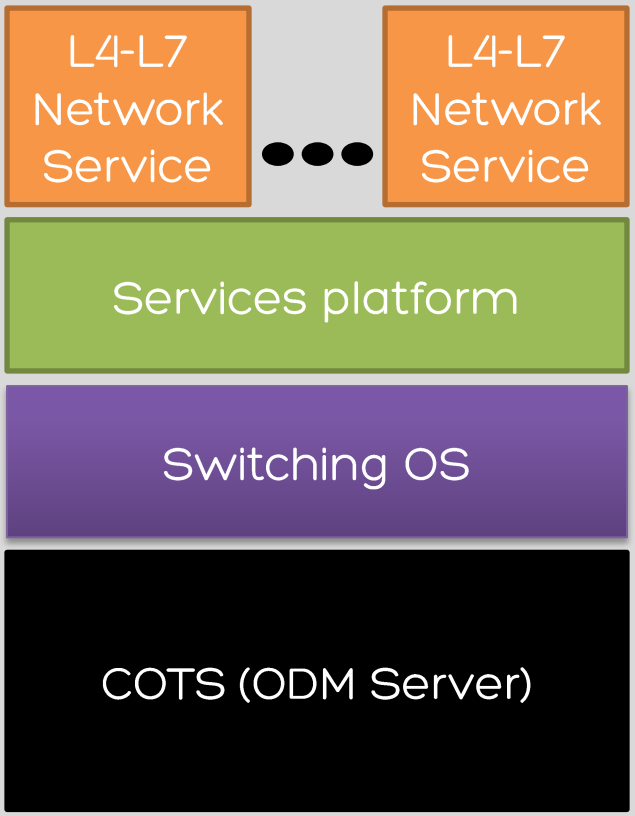
Source: J.P. Morgan estimates, Dell'Oro Group

Business Model

- Monetization of the software only - ToR switching OS, Services platform and L4-L7 virtualized network services
- Pre-qualified ODM vendors for server hardware on which the solution is installed
- Subscription based licensing model for software (switching, services platform and services licensed separately to allow flexibility to choose from Lavelle and Third Party for L4-L7 services)
- Consumption based pricing for network services allowing customers to use a pay-as-you-go model rather than initial capital expense for services

Pricing

US $2500 annual subscription price for switching and services platform
No revenue attribution considered for L4-L7 network services at this point.



Consumption based pricing for services, pricing for per gigabit throughput for services (e.g. L4 ADC) on a consumption basis

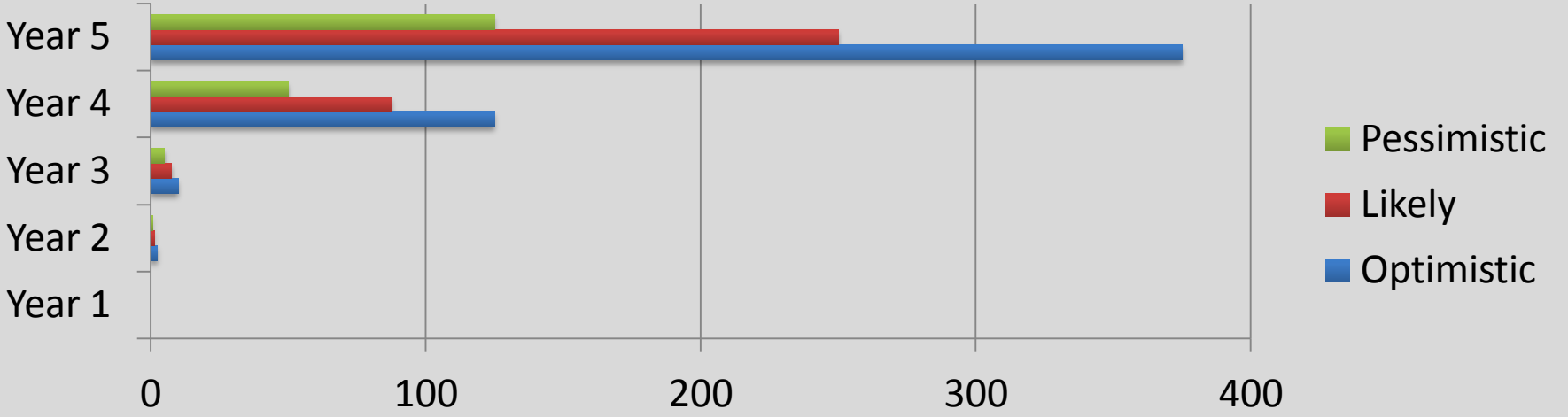
US$ 2000 per year subscription leading to $10000 TCO for a 5 Year subscription

US$ 500 per year subscription leading to $2000 TCO for a 5 Year subscription

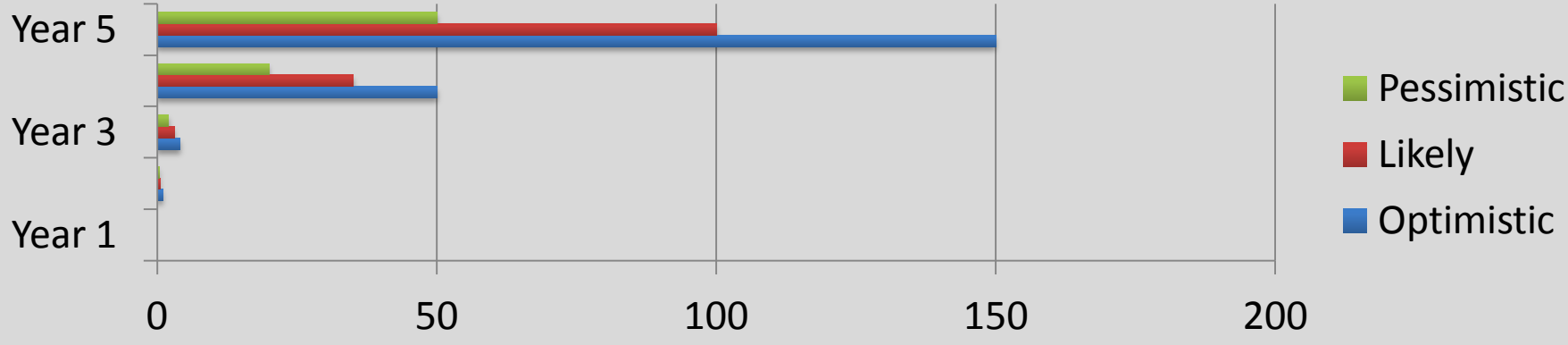
No revenue attribution considered from the server hardware. Customer buys directly from a ODM Server vendor qualified by Lavelle

Forecast

Revenue (in Million USD) [Considering SDN-capable new switches market size alone, and excluding services revenue]



Number of units shipped (1K Units)



Competition: Current landscape

Switch OS / Platform	L4-L7 Applications	Converged Platform
Cumulus Pica8 Pluribus Quagga Big Switch BIRD Zebra XORP	F5 Palo Alto Networks A10 Embrane Pertino Vyatta (Brocade) Vello	VMware NSX Juniper OpenContrail

Competition: Why should Lavelle win?

	We can, They can't	They can, we can't
Existing TOR Vendors (Cisco, Arista, Juniper)	✓ Cannibalize existing ASIC based hardware solutions ✓ Direct top line hit for the incumbents if they take this approach	✓ Drop prices and negate the impact of COTS based TOR solution ✓ Sweeten TOR deals with freebies for services
L4-L7 Network Services Vendors (e.g. Palo Alto Networks, F5)	✓ ToR not the primary business, will be entering a new market ✓ Hardware Appliance Top line with take a direct hit	✓ Increase market share in specific NFV services segment given that they are incumbents ✓ Invest in research required for specific services like security
NFV Vendors (Startups in NFV space)	✓ NFV Vendors focus is limited to virtualizing network functions	✓ Nothing stops NFV vendors to take this approach

Operating Plan - Year #1

- Engineering Team
  - 12-15 software engineers
  - Average head count costs: 75K per engineer
  - 10% overhead for lab & operational costs
  - 1.25 million USD

- Business Team
  - 2-3 business leaders (Products/Marketing/Sales)
  - Costs include Business development, customer engagements, travel to North American, EMEA, APAC markets, conferences..
  - 0.5 million USD

- Year #1 Targets
  - Develop first proof of concept, for customer trial
  - Deploy Lavelle network services solution in 1-2 customer data centers
  - No revenue expectations, but architecture/solution buy-in from customers
  - Raise Series A

Operating Plan - Year #2 & #3

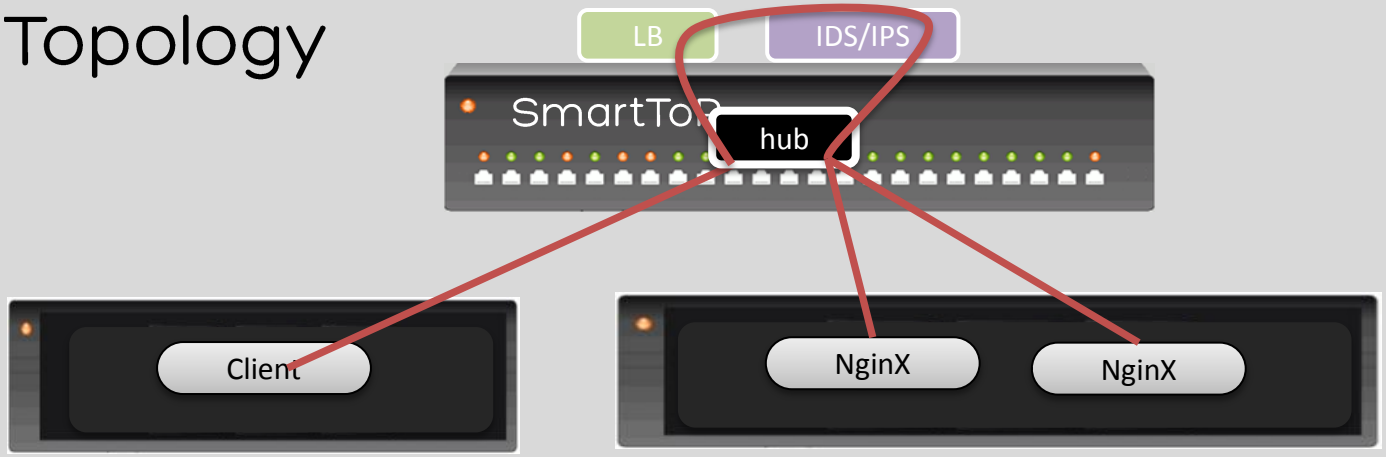
	Y2Q1	Y2Q2	Y2Q3	**Y2Q4**	Y3Q1	Y3Q2	Y3Q3	**Y3Q4**
Milestone	Formal BETA start	Complete successful BETA	Focus on FCS for Revenue	**Establish revenue pipeline of 250 units**	Establish choice of ODM platforms	Take multiple ODM SKU(s) to market	Revenue ramp up (Target pipeline of 2000 units)	**Revenue ramp up (Target pipeline of 2000 units)**
Cash burn	$600k	$750k	$875k	$925k	$975k	$975k	$1450k	$1450k
Cumm. Cash Burn	**$600k**	**$1,350k**	**$2,225k**	***$3,150k***	**$4,125k**	**$5,100k**	**$6,550k**	***$8,000k***
Head Count	18	24	29	**29**	31	31	38	**38**
Engineering	15	20	25	25	25	25	30	30
Sales	1	2	2	2	2	2	4	4
Business Team	2	2	2	2	4	4	4	4
Biz Dev	$150k	$150k	$150k	$200k	$200k	$200k	$500k	$500k

Notes:

- ✓ R&D Cost/HC = $100k/year (assumes India engineering), Y2/Y3 will have U.S/EMEA hires for Business team as well.
- ✓ Biz Dev includes setting up PoC racks in a co-located DC, for customers to visit and see the technology working at scale..
- ✓ Raise 10 million USD in Series A, to cover Y2/Y3
- ✓ At the end of Y3, maintain 5 million USD annual cash burn, and achieve 5 million revenue target (post margins)

Demo

- Topology



- YouTube : https://www.youtube.com/watch?v=gzDnDZ4ENEg

Thank You