

Some Basics of Venture Capital

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What is Venture Capital?

- Private or institutional investment (**capital**) in relatively early-stage companies (**ventures**)
- Recently focused on technology-heavy companies:
 - Computer and network technology
 - Telecommunications technology
 - Biotechnology
- Types of VCs:
 - **Angel** investors
 - **Financial** VCs
 - **Strategic** VCs

Angel Investors

- Typically a wealthy individual
- Often with a tech industry background, in position to judge high-risk investments
- Usually a **small** investment (< \$1M) in a **very** early-stage company (demo, 2-3 employees)
- Motivation:
 - Dramatic return on investment via **exit** or **liquidity event**:
 - Initial Public Offering (IPO) of company
 - Subsequent financing rounds
 - Interest in technology and industry

Financial VCs

- Most common type of VC
- An investment firm, capital raised from institutions and individuals
- Often organized as formal **VC funds**, with limits on size, lifetime and exits
- Sometimes organized as a **holding company**
- Fund compensation: **carried interest**
- Holding company compensation: IPO
- Fund sizes: ~\$25M to 10's of billions
- Motivation:
 - Purely **financial**: maximize return on investment
 - IPOs, Mergers and Acquisitions (M&A)

Strategic VCs

- Typically a (small) division of a large technology company
- Examples: Intel, Cisco, Siemens, AT&T
- Corporate funding for **strategic** investment
- Help companies whose success may spur revenue growth of VC corporation
- **Not** exclusively or primarily concerned with return on investment
- May provide investees with valuable connections and partnerships
- Typically take a "back seat" role in funding

The Funding Process: Single Round

- Company and interested VCs find each other
- Company makes its pitch to **multiple** VCs:
 - Business plan, executive summary, financial projections with assumptions, competitive analysis
- Interested VCs engage in **due diligence**:
 - Technological, market, competitive, business development
 - Legal and accounting
- A **lead** investor is identified, rest are **follow-on**
- The following are negotiated:
 - Company **valuation**
 - **Size** of round
 - Lead investor share of round
 - **Terms** of investment
- **Process repeats several times, builds on previous rounds**

Due Diligence: Tools and Hurdles

- **Tools:**

- Tech or industry background (in-house rare among financials)
- Industry and analyst reports (e.g. Gartner)
- Reference calls (e.g. beta's) and clients
- Visits to company
- DD from previous rounds
- Gut instinct

- **Hurdles:**

- Lack of company history
- Lack of market history
- Lack of market!
- Company hyperbole
- Inflated projections
- Changing economy

Terms of Investment

- Initially laid out in a **term sheet** (**not** binding!)
- Typically comes after a fair amount of DD
- Valuation + investment → VC equity (share)
- Other important elements:
 - **Board seats and reserved matters**
 - **Drag-along and tag-along rights**
 - **Liquidation and dividend preferences**
 - **Non-competition**
 - **Full and weighted ratchet**
- **Moral:** These days, VCs extract a **huge** amount of **control** over their portfolio companies.

Basics of Valuation

- **Pre-money valuation V** : agreed value of company **prior** to this round's investment (I)
- **Post-money valuation $V' = V + I$**
- VC equity in company: $I/V' = I/(V+I)$, **not** I/V
- Example: \$5M invested on \$10M pre-money gives VC 1/3 of the shares, not $\frac{1}{2}$
- Partners in a venture vs. outright purchase
- I and V are items of **negotiation**
- Generally company wants large V , VC small V , but there are many subtleties...
- This round's V will have an impact on future rounds
- Possible elements of valuation:
 - Multiple of revenue or earnings
 - Projected percentage of market share

Board Seats and Reserved Matters

- Corporate boards:
 - Not involved in day-to-day operations
 - Hold **extreme** control in major corporate events (sale, mergers, acquisitions, IPOs, bankruptcy)
- Lead VC in each round takes seat(s)
- **Reserved matters** (veto or approval):
 - Any sale, acquisition, merger, liquidation
 - Budget approval
 - Executive removal/appointment
 - Strategic or business plan changes
- During **difficult** times, companies are often **controlled** by their VCs

Other Typical VC Rights

- **Right of first refusal** on sale of shares
- **Tag-along rights**: follow founder sale on pro rata basis
- **Drag-along rights**: force sale of company
- **Liquidation preference**: multiple of investment
- **No-compete** conditions on founders
- **Anti-dilution protection**:
 - Recompute VC shares based on subsequent "down round"
 - **Weighted ratchet**: use average (weighted) share price so far
 - **Full ratchet**: use down round share price
 - Example:
 - Founders 10 shares, VC 10 shares at \$1 per share
 - Founder issues 1 additional share at \$0.10 per share
 - Weighted ratchet: avg. price $10.10/11$, VC now owns ~10.89 shares (21.89 total)
 - Full ratchet: VC now owns $10/0.10 = 100$ shares (out of 111)
 - Matters in **bridge rounds** and other dire circumstances
- **Right to participate** in subsequent rounds (usually follow-on)
- Later VC rights often supercede earlier

Why Multiple Rounds and VCs?

- **Multiple rounds:**
 - Many points of valuation
 - Company: money gets cheaper if successful
 - VCs: allows specialization in stage/risk
 - Single round wasteful of capital
- **Multiple VCs:**
 - Company: Amortization of control!
 - VCs:
 - Share risk
 - Share DD
 - Both: different VC strengths (financial vs. strategic)

So What Do VCs Look For?

- Committed, experienced management
- Defensible technology
- Growth market (**not** consultancy)
- Significant revenues
- Realistic sales and marketing plan (VARs and OEMs vs. direct sales force)

Who Can and Will Pay?

- Internet composed of many independently owned and operated autonomous networks
- Many subnets embedded in larger networks
- Detecting/defending DDoS requires a minimum network footprint
- Must solve problem "upstream" at routers with sufficient bandwidth to withstand attack traffic!
- May simply trace attack source to network edge
- Target customers:
 - Large and medium ISPs, MSPs, NSPs
 - Large and medium data centers
 - Backbone network providers
 - Future: wireless operators; semi-private networks (FAA, utilities)
 - Making target customers care; cannibalization
- Key points:
 - Problem did not exist until recently on large scale
 - No product available for its defense
 - No historical analysis of market possible (firewall and IDS)

The Companies

- Four early-stage companies focused specifically on DDoS
- All with strong roots in academia
- Headcounts in 10's; varied stages of funding and BD
- Larger set of potential competitors/confusers:
 - Router manufacturers (e.g. Cisco)
 - IDS and firewall companies
 - Virus detection companies (e.g. McAfee)
- Technology:
 - All four solutions involve placing boxes & SW "near" routers
 - Differing notions of "near"
 - Boxes monitor (some or all) network traffic
 - Boxes communicate with a Network Operations Center (NOC)
 - Key issues:
 - Detection or Defense?
 - Intrusiveness of solution?

Some Specifics

- Company **Detect**:
 - Emphasis on detection tools provided to NW engineer
 - Claim more intrusive/automated solutions unpalatable
 - Emphasis on GUI and multiple views of DDoS data
 - More advanced in BD (betas), PR, partnerships
 - More advanced in funding (>>\$10M capital taken)
- Company **Defend-Side**:
 - Emphasize prevention of attacks by filtering victim traffic
 - Box sits to the **side** of router over fast interface
 - Claim there is a "sweet spot" of intrusiveness
 - Box only needs to be fast enough for victim traffic, not all
 - Don't need perfect filtering to be effective
 - No GUI emphasis; behind in BD; less advanced in funding
- Company **Defend-Path**:
 - Also emphasizing prevention, but box sits on "data path"
 - Need faster boxes and more boxes (scalability)
 - Concerns over router integration

Due Diligence

- **No** company has **any** revenue yet
- Some have first-generation product available
- All have arranged beta trials with some ISPs
- Have roughly similar per-box pricing model and ROI argument
- Due diligence steps:
 - Repeated visits/conversations with companies: technical, sales strategy
 - Multiple conversations with beta NW engineers
 - Development of financial model for revenue projections & scenarios
 - Compare with firewall and IDS market history: winners & losers, mergers
 - Conversations with previous round VCs: DD and commitment
- In the end, a decision between:
 - More conservative technology with a slight lead in BD and R&D
 - More ambitious technology with less visibility, but a better deal
- Contemplating both investments...
- ...then came September 11.