Some Basics of Venture Capital

Michael Kearns
Chief Technology Officer
Syntek Capital
Outline

- The basics: how VC works
- Case study: DDoS defense companies
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 it 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)
Case Study: DDoS Defense Technology

• DDoS: Distributed Denial of Service
• Web server, router, DNS server, etc. flooded with automated, spurious requests for service at a high rate
• Outcomes:
  - Resource crashes
  - Legitimate requests denied service
  - Bandwidth usage and expense increase
• Attack types:
  - SYN flood
  - ICMP echo reply attack
  - Zombie attacks
  - IP spoofing
  - Continually evolving!
• Attack characteristics:
  - Distributed
  - Statistical
  - Highly adaptive
• Not defendable via cryptography, firewalls, intrusion detection,…
• An arms race
Market Landscape

• Victims include CNN, eBay, Microsoft, Amazon
• > 4000 attacks per week (UCSD study)
• Recent “Code Red” attack on White House foiled, but > 300K client zombies infected
• Costs:
  - Downtime, lost productivity
  - Recovery costs (personnel)
  - Lost revenue
  - Brand damage
• Attack costs $1.2B in Feb. ‘00; 2005 market estimate $800M (Yankee Group)
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.
Questions?