

# CrowdStrike, Inc.

## Strong F2Q21 – Strong Momentum, Raising Target Price

Software | Increase Target Price

CRWD

Target price (12M, US\$)

125.00

Neutral<sup>[V]</sup>

CrowdStrike reported another strong quarter, beating both ARR/revenue healthily by 8/12%. We believe exceedingly high embedded expectations and the recent run into earnings explain the -6% AH stock reaction, despite solid business fundamentals. FY21 revenue guidance was revised +7% at the midpoint, even with embedding higher churn through the remainder of the year. We continue to view CRWD as a secular winner in its space, leveraging cloud scale data and a single agent architecture to drive endpoint consolidation as well as cloud workload protection. We remain Neutral, given valuation, while revising our TP to \$125 (from \$80).

- **F2Q Highlights:** We emphasize ARR +87% y/y (vs. CSe 71%) as the best leading metric for the business, and believe commentary indicating both a strong pipeline and backlog should alleviate concerns about billings deceleration to 55% y/y (vs 100% prior q), which appear to be related to invoice timing/duration. CRWD also secured its second largest deal in history this quarter, expanding an existing customer into low eight figures ARR. SMB and large customer traction continue to highlight CRWD's appeal to businesses of all sizes.
- **Guidance:** Management continues to guide conservatively, expecting below seasonal net new ARR for F3Q, off an unusually strong F2Q base. The outlook bakes in prudent conservatism and we now model F2H21E net new ARR +13% y/y and +5% H/H. Management provided revenue guidance for F3Q / FY21 ahead of Street models by 9/6% at midpoints and now expects to be operating cash and free cash flow positive for F2H21E.
- **Secular Winner Displacing Incumbents:** We believe security is increasingly a data analytics problem, and CrowdStrike's cloud native approach is well suited to address security threats from ever evolving attack vectors. CRWD continues to successfully displace Symantec post AVGO acquisition, evidenced by net new customer adds (+969 vs 730 last year). We believe CRWD's long-term growth hinges on its ability to drive module adoption, which continues to increase (39% of custs w/ 5+ modules vs. 35% last qtr).
- **Estimate Revision and Valuation:** Our FY21 revenue/non-GAAP EPS increases to \$826mn/\$0.04 from \$763mn/\$(0.07). Our DCF-derived \$125 target price implies 23.4x EV/CY21 revenue. Risks include increased competition from innovative private companies and platform consolidators, as well as macro uncertainty leading to reduced IT spending.

Previous target price (12M, US\$)	80.00
Price (2 Sep 20, US\$)	142.07
52-week price range	143.69 - 33.01
Enterprise value (US\$ m)	29,611
[V] = Stock Considered Volatile (see Disclosure Appendix)	

### Research Analysts

Brad Zelnick

Syed Talha Saleem, CFA

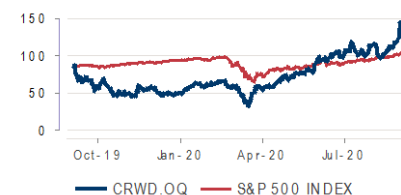
Ray McDonough, CFA

### Financial and valuation metrics

Year	1/19A	1/20A	1/21E	1/22E
EPS (Excl. ESO) (US\$)	-2.65	-0.39	0.04	0.09
EPS (CS adj.,)	-2.65	-0.42	0.04	0.10
Prev. EPS (CS adj., US\$)	-	-	-0.07	0.06
P/E (CS adj.) (x)	-53.5	-336.0	n.m	n.m
P/E rel. (CS adj., %)	-	-1587.0	13900.7	7067.4
Revenue (US\$ m)	249.8	481.4	825.9	1,151.8
Net Debt (US\$ m)	-192	-912	-1,075	-1,278
OCFPS (US\$)	-0.42	0.63	0.92	1.24
P/OCF (x)	-341.1	227.3	154.9	114.4
Number of shares (m)	215.99			42.95
BV/share (Next Qtr., US\$)	6.1			13.3
Net debt (Next Qtr., US\$ m)	-1,069.2			-
Dividend yield (%)	-			-

Source: Company data, Refinitiv, Credit Suisse estimates

### Share price performance



On 02-Sep-2020 the S&P 500 INDEX closed at 3580.84Daily  
Sep04, 2019 - Sep02, 2020, 09/04/19 = US\$85.31

Quarterly EPS	Q1	Q2	Q3	Q4
2020A	-0.47	-0.18	-0.07	-0.02
2021E	0.02	0.04	-0.01	-0.01
2022E	0.00	-0.00	0.03	0.06

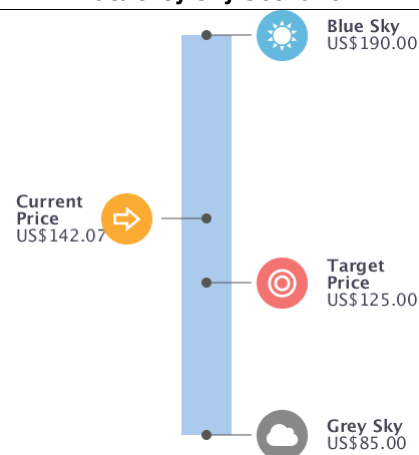
**DISCLOSURE APPENDIX AT THE BACK OF THIS REPORT CONTAINS IMPORTANT DISCLOSURES, ANALYST CERTIFICATIONS, LEGAL ENTITY DISCLOSURE AND THE STATUS OF NON-US ANALYSTS.** US Disclosure: Credit Suisse does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

**CrowdStrike, Inc. (CRWD)**Price (02 Sep 2020): **US\$142.07**Target Price: (from 80.00) **125.00**Analyst: **Brad Zelnick**Rating: **Neutral [V]**

Income Statement	1/19A	1/20A	1/21E	1/22E
Revenue (US\$ m)	249.8	481.4	825.9	1,151.8
EBITDA	(101.0)	(42.6)	45.5	86.1
Operating profit	(115.8)	(65.6)	6.0	22.9
Recurring profit	(117.7)	(59.4)	10.6	22.2
Cash Flow	1/19A	1/20A	1/21E	1/22E
Cash flow from operations	(19)	100	216	307
CAPEX	(47)	(87)	(86)	(103)
Free cashflow to the firm	(66)	12	129	204
Cash flow from investments	(147)	(88)	559	(103)
Net share issue(/repurchase)	209	712	34	0
Dividends paid	0	0	0	0
Issuance (retirement) of debt	-	-	-	-
Other	(16)	(6)	1	0
Cashflow from financing activities	192	706	34	0
Effect of exchange rates	-	-	-	-
Changes in Net Cash/Debt	126	720	163	204
Net debt at end	(192)	(912)	(1,075)	(1,278)
Balance Sheet (\$US)	1/19A	1/20A	1/21E	1/22E
Assets				
Other current assets	47	95	135	124
Total current assets	331	1,172	1,487	1,745
Total assets	433	1,405	1,822	2,171
Liabilities				
Short-term debt	0	0	0	0
Total current liabilities	281	493	816	1,086
Long-term debt	0	0	0	0
Total liabilities	363	662	1,069	1,388
Shareholder equity	70	743	754	783
Total liabilities and equity	433	1,405	1,822	2,171
Net debt	(192)	(912)	(1,075)	(1,278)
Per share	1/19A	1/20A	1/21E	1/22E
No. of shares (wtd avg)	45	160	235	247
CS adj. EPS	(2.65)	(0.42)	0.04	0.10
Prev. EPS (US\$)	-	-	(0.07)	0.06
Dividend (US\$)	0.00	0.00	0.00	0.00
Free cash flow per share	(1.47)	0.08	0.55	0.82
Earnings	1/19A	1/20A	1/21E	1/22E
Sales growth (%)	110.4	92.7	71.6	39.5
Net profit growth (%)	2.8	47.4	114.6	157.4
EPS growth (%)	9.3	84.1	109.2	149.0
EBIT margin (%)	(46.4)	(13.6)	0.7	2.0
Valuation	1/19A	1/20A	1/21E	1/22E
EV/Sales (x)	122.06	61.85	35.85	25.53
EV/EBIT (x)	(263.2)	(453.6)	4895.1	1286.7
P/E (x)	(53.5)	(336.0)	3663.5	1471.4
Quarterly EPS	Q1	Q2	Q3	Q4
2020A	-0.47	-0.18	-0.07	-0.02
2021E	0.02	0.04	-0.01	-0.01
2022E	0.00	-0.00	0.03	0.06

**Company Background**

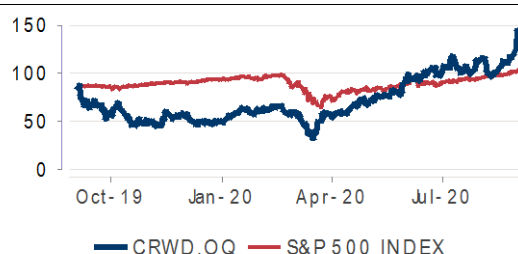
CrowdStrike, Inc. is an American cybersecurity technology company based in Sunnyvale, California. The company provides endpoint security, threat intelligence, and incident response services to customers in more than 170 countries.

**Blue/Grey Sky Scenario****Our Blue Sky Scenario (US\$)****(from 100.00) 190.00**

CrowdStrike becomes the major consolidator within Endpoint security, in addition to meaningfully expanding into non-security related modules and further expanding TAM. CrowdStrike Store as well as partnerships become strong drivers for the business. Competitors will lag in developing similar technology. We assume a 5% terminal growth rate. This yields a Blue Sky price of \$125 implying 38.8x EV/CY21 Sales.

**Our Grey Sky Scenario (US\$)****(from 35.00) 85.00**

Competitors redesign their architecture and technology, catching up in terms of functionality. Non-security use cases take longer than expected to materialize, or do not materialize at all. Prices for Endpoint security erode and pressure margins, while customers do not purchase higher ASP modules. We assume a 3% terminal growth rate. This yields a Grey Sky price of \$85, implying 16.8x EV/CY20 Sales.

**Share price performance**

On 02-Sep-2020 the S&P 500 INDEX closed at 3580.84  
Daily Sep04, 2019 - Sep02, 2020, 09/04/19 = US\$85.31

Source: Company data, Refinitiv, Credit Suisse estimates

# Actuals vs Expectations

**Figure 1: F2Q21A – Actuals vs Expectations**

US\$ in millions, unless otherwise stated

2Q21	Actual	CS est.	%Δ	Cons.	%Δ	Guidance
<b>Total Revenue</b>	<b>\$198,971</b>	<b>\$185,817</b>	<b>7.1%</b>	<b>\$178,078</b>	<b>11.7%</b>	<b>\$185.8 - 190.3mn</b>
% Growth - Y/Y	84.0%	71.9%		64.7%		
Subscription	\$184,256	\$173,705	6.1%	\$162,222		
% Growth - Y/Y	88.8%	78.0%		66.3%		
Professional Services	\$14,715	\$12,113	21.5%	\$15,856		
% Growth - Y/Y	39.7%	15.0%		50.5%		
<b>ARR</b>	<b>\$791,000</b>	<b>\$726,596</b>	<b>8.9%</b>	<b>\$732,000</b>	<b>8.1%</b>	
	86.6%	71.4%		72.7%		
<b>Gross Profit (Non-GAAP)</b>	<b>\$148,703</b>	<b>\$138,417</b>	<b>7.4%</b>	<b>\$134,190</b>	<b>10.8%</b>	
% Gross Margin	74.7%	74.5%		75.4%		
<b>Operating Income (Non-GAAP)</b>	<b>\$7,826</b>	<b>(\$2,432)</b>	<b>421.7%</b>	<b>\$1,165</b>	<b>-571.8%</b>	<b>\$(3.1) - 0.0mn</b>
% Operating Margin	3.9%	-1.3%		0.7%		
<b>Net Income (Non-GAAP)</b>	<b>\$7,943</b>	<b>(\$2,095)</b>	<b>479.1%</b>	<b>\$4,519</b>	<b>-75.8%</b>	<b>\$(3.8) - (0.7)mn</b>
% Net Income Margin	4.0%	-1.1%		2.5%		
<b>Diluted EPS (Non-GAAP)</b>	<b>\$0.04</b>	<b>(\$0.01)</b>	<b>478.5%</b>	<b>\$0.02</b>	<b>-83.3%</b>	<b>\$(0.02) - \$ 0.00</b>
Diluted Shares	216,695	216,326		225,950		216,000
<b>Operating Cash Flow</b>	<b>\$55,025</b>	<b>(\$6,188)</b>	<b>(989.3)%</b>	<b>\$98,589</b>	<b>-44.2%</b>	
% OCF Margin	27.7%	-3.3%		55.4%		
CapEx	\$20,640	\$11,149	85.1%	\$11,588	78.1%	
% of Revenue	10.4%	6.0%		6.5%		
<b>Free Cash Flow</b>	<b>\$32,417</b>	<b>(\$19,195)</b>	<b>268.9%</b>	<b>\$87,000</b>	<b>62.7%</b>	
% FCF Margin	16.3%	-10.3%		48.9%		

Source: Company data, Credit Suisse estimates

## Changes to Model

Figure 2: Changes to Model – F3Q21E and FY21E

3Q21				2021 (E)				
	CS est.	CS prev.	%Δ	Guidance	CS est.	CS prev.	%Δ	Guidance
<b>Total Revenue</b>	<b>\$212,535</b>	<b>\$193,144</b>	<b>10%</b>	<b>\$210.6 - \$215.0 mn</b>	<b>\$825,937</b>	<b>\$762,980</b>	<b>8%</b>	<b>\$809.1 - \$826.7mn</b>
% Growth - Y/Y	69.9%	54.4%			71.6%	58.5%		
Subscription	197,822	181,701	9%		765,046	709,318	8%	
% Growth - Y/Y	73.2%	59.1%			75.3%	62.6%		
Professional Services	14,712	11,443	29%		60,891	53,662	13%	
% Growth - Y/Y	35.0%	5.0%			35.0%	19.0%		
<b>ARR</b>	<b>\$875,888</b>	<b>\$764,432</b>	<b>15%</b>		<b>\$990,639</b>	<b>\$825,036</b>	<b>20%</b>	
% Growth - Y/Y	74.6%	52.4%			65.0%	37.4%		
<b>Gross Profit (Non-GAAP)</b>	<b>\$158,233</b>	<b>\$143,672</b>	<b>10%</b>		<b>\$620,219</b>	<b>\$568,669</b>	<b>9%</b>	
% Gross Margin	74.5%	74.4%			75.1%	74.5%		
<b>Operating Income (Non-GAAP)</b>	<b>(\$1,203)</b>	<b>(\$11,229)</b>	<b>(89)%</b>	<b>\$(1.4) - \$1.6 million</b>	<b>\$6,049</b>	<b>(\$17,673)</b>	<b>(134)%</b>	<b>\$3.6 - \$16.4 mn</b>
% Operating Margin	-0.6%	-5.8%			0.7%	-2.3%		
<b>Net Income (Non-GAAP)</b>	<b>(\$1,397)</b>	<b>(\$11,543)</b>	<b>(88)%</b>	<b>\$(2.2) - \$0.9 million</b>	<b>\$9,113</b>	<b>(\$14,545)</b>	<b>(163)%</b>	<b>\$5.6 - \$18.4 mn</b>
% Net Income Margin	-0.7%	-6.0%			1.1%	-1.9%		
<b>Diluted EPS (Non-GAAP)</b>	<b>(\$0.01)</b>	<b>(\$0.05)</b>	<b>(88)%</b>	<b>\$(0.01) - \$0.00</b>	<b>\$0.04</b>	<b>(\$0.07)</b>	<b>(159)%</b>	<b>\$0.02 - \$0.08</b>
Diluted Shares	219,404	221,734		219 million	235,003	219,617		234 million
<b>Operating Cash Flow</b>	<b>\$30,291</b>	<b>\$22,189</b>	<b>37%</b>		<b>\$215,578</b>	<b>\$144,749</b>	<b>49%</b>	<b>Positive OCF - FY and 2H</b>
% OCF Margin	14.3%	11.5%			26.1%	19.0%		
CapEx	21,253	15,452	38%		72,859	52,770	38%	
% of Revenue	10.0%	8.0%			8.8%	6.9%		
<b>Free Cash Flow</b>	<b>\$4,465</b>	<b>\$2,583</b>	<b>73%</b>		<b>\$129,434</b>	<b>\$79,847</b>	<b>62%</b>	<b>Positive FCF - FY and 2H</b>
% FCF Margin	2.1%	1.3%			15.7%	10.5%		

Source: Company data, Credit Suisse estimates

Figure 3: Income Statement

	2017A Full Year	2018A Full Year	2019A Full Year	Apr '19 1Q20	Jul '19 2Q20	Oct '19 3Q20	Jan '20 4Q20	2020A Full Year	Apr '20 1Q21	Jul '20 2Q21	Oct '20E 3Q21E	Jan '21E 4Q21E	2021E Full Year	2022E Full Year
<b>Income Statement (Non-GAAP)</b>														
<b>Revenue</b>	52,745.0	118,752.5	249,823.6	96,077.0	108,108.0	125,119.0	152,109.0	481,413.0	178,078.0	198,971.0	212,534.7	236,353.8	825,937.5	1,151,787.7
Change, y/y		125.1%	110.4%	103.2%	94.1%	88.5%	89.1%	92.7%	85.3%	84.0%	69.9%	55.4%	71.6%	39.5%
Change, q/q				19.4%	12.5%	15.7%	21.6%		17.1%	11.7%	6.8%	11.2%		
<b>Non-GAAP Cost of Revenue</b>	33,818.0	53,820.7	85,989.5	28,801.0	29,608.0	34,844.0	40,339.0	133,592.0	43,867.0	50,268.0	54,301.6	57,282.1	205,718.8	268,154.5
<b>Non-GAAP Gross Profit</b>	18,927.0	64,931.7	163,834.0	67,276.0	78,500.0	90,275.0	111,770.0	347,821.0	134,211.0	148,703.0	158,233.0	179,071.7	620,218.7	883,633.1
Gross Margin	35.9%	54.7%	65.6%	70.0%	72.6%	72.2%	73.5%	72.3%	75.4%	74.7%	74.5%	75.8%	75.1%	76.7%
<b>Operating Expenses</b>														
Sales and Marketing	53,110.0	102,909.5	167,506.0	55,294.0	58,604.0	61,290.0	67,364.0	242,552.0	79,420.0	81,493.0	93,515.2	107,541.0	361,969.2	509,034.9
Sales and Marketing, % of Revenue	100.7%	86.7%	67.0%	57.6%	54.2%	49.0%	44.3%	50.4%	44.6%	41.0%	44.0%	45.5%	43.8%	44.2%
y/y growth		93.8%	62.8%	54.3%	50.0%	37.8%	40.0%	44.8%	43.6%	39.1%	52.6%	59.6%	49.2%	40.6%
Research and Development	38,584.0	55,122.1	76,536.9	23,183.0	26,644.0	31,286.0	33,631.0	114,744.0	35,668.0	41,444.0	46,757.6	49,634.3	173,503.9	241,198.4
Research and Development, % of Revenue	73.2%	46.4%	30.6%	24.1%	24.6%	25.0%	22.1%	23.8%	20.0%	20.8%	22.0%	21.0%	21.0%	20.9%
y/y growth		42.9%	38.8%	35.4%	45.2%	59.0%	57.3%	49.9%	53.9%	55.5%	49.5%	47.6%	51.2%	39.0%
General and Administrative	15,698.0	25,394.4	35,635.1	10,676.0	13,893.0	14,150.0	17,443.0	56,162.0	17,958.0	17,940.0	19,163.0	23,635.4	78,696.3	110,544.0
General and Administrative, % of Revenue	29.8%	21.4%	14.3%	11.1%	12.9%	11.3%	11.5%	11.7%	10.1%	9.0%	9.0%	10.0%	9.5%	9.6%
y/y growth		61.8%	40.3%	66.7%	73.9%	57.7%	42.2%	57.6%	68.2%	29.1%	35.4%	35.5%	40.1%	40.5%
<b>Total Operating Expenses</b>	107,392.0	183,426.1	279,678.1	89,153.0	99,141.0	106,726.0	118,438.0	413,458.0	133,046.0	140,877.0	159,435.8	180,810.7	614,169.5	860,777.3
<b>Income (Loss) from Operations</b>	(88,465.0)	(118,494.3)	(115,844.1)	(21,877.0)	(20,641.0)	(16,451.0)	(6,668.0)	(65,637.0)	1,165.0	7,826.0	(1,202.8)	(1,739.0)	6,049.2	22,855.8
Operating Margin		-99.8%	-46.4%	-22.8%	-19.1%	-13.1%	-4.4%	-13.6%	0.7%	3.9%	-0.6%	-0.7%	0.7%	2.0%
Interest Expense	(615.0)	(2,758.5)	(428.0)	(1.0)	(164.0)	(132.0)	(145.0)	(442.0)	(143.0)	(174.0)	(174.0)	(174.0)	(665.0)	(665.0)
Other Income (Expense)	(82.0)	(362.7)	(1,418.0)	394.0	(1,701.0)	3,579.0	3,203.0	5,475.0	4,533.0	732.0	-	-	5,265.0	-
Earnings Before Taxes	(89,162.0)	(121,615.5)	(117,690.1)	(21,484.0)	(22,506.0)	(13,004.0)	(3,610.0)	(60,604.0)	5,555.0	8,384.0	(1,376.8)	(1,913.0)	10,649.2	22,190.8
EBT Margin		-102.4%	-47.1%	-22.4%	-20.8%	-10.4%	-2.4%	-12.6%	3.1%	4.2%	-0.6%	-0.8%	1.3%	1.9%
Provision for Income Taxes	(87.0)	(928.8)	(1,366.7)	(595.0)	(635.0)	(434.0)	(333.0)	(1,997.0)	(1,036.0)	(441.0)	(20.7)	(38.3)	(1,535.9)	1,264.0
<b>Non-GAAP Net Income (Loss)</b>	(89,249.0)	(122,544.3)	(119,056.8)	(22,079.0)	(23,141.0)	(13,438.0)	(3,943.0)	(62,601.0)	4,519.0	7,943.0	(1,397.5)	(1,951.2)	9,113.3	23,454.9
Net Income Margin	-169.2%	-103.2%	-47.7%	-23.0%	-21.4%	-10.7%	-2.6%	-13.0%	2.5%	4.0%	-0.7%	-0.8%	1.1%	2.0%
<b>Non-GAAP EPS</b>	(\$2.25)	(\$2.93)	(\$2.65)	(\$0.47)	(\$0.18)	(\$0.07)	(\$0.02)	(\$0.42)	\$0.02	\$0.04	(\$0.01)	(\$0.01)	\$0.04	\$0.10

Source: Company data, Credit Suisse estimates

## Valuation, Methodology and Risks

---

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for Broadcom Ltd (AVGO.OQ)

**Method:** Our Outperform rating and \$400 target price for AVGO are based on 18.6x times CY21 EV/FCF, modestly below peers despite superior returns and profitability. We rate AVGO Outperform as we expect it to appreciate more than its peers.

**Risk:** Risks to our \$400 target price and Outperform rating for AVGO are (1) competitive pressures in the Wireless business, (2) high customer concentration, (3) failure to execute on cost synergies, and (4) the highly cyclical nature of the semiconductor industry.

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for CrowdStrike, Inc. (CRWD.OQ)

**Method:** CrowdStrike continues to gain share in the Endpoint Security market by replacing legacy competitors and gaining customers. CrowdStrike expands its gross margin profile through higher margin business, scale, and further hosting optimization. The company also achieves operating margin leverage through S&M and G&A efficiency. Our \$125 target price and Neutral rating assumes a 10.3% WACC which declines to 9.1% in the terminal year and uFCF which grows to >\$3bn by 2034, ultimately decelerating to a terminal growth rate of 3.5%.

**Risk:** Risks to our \$ 125 target price and Neutral rating include increased competition from both legacy and next-gen vendors, inability to expand module adoption with new and existing customers, and margin pressure from eroding prices, lack of mix-shift, or inability to scale the business.

**Companies Mentioned** (Price as of 02-Sep-2020)**Broadcom Ltd** (AVGO.OQ, \$375.01)**CrowdStrike, Inc.** (CRWD.OQ, \$142.07, NEUTRAL[V], TP \$125.0)

## Disclosure Appendix

**Analyst Certification**

I, Brad Zelnick, certify that (1) the views expressed in this report accurately reflect my personal views about all of the subject companies and securities and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this report.

**3-Year Price and Rating History for Broadcom Ltd (AVGO.OQ)**

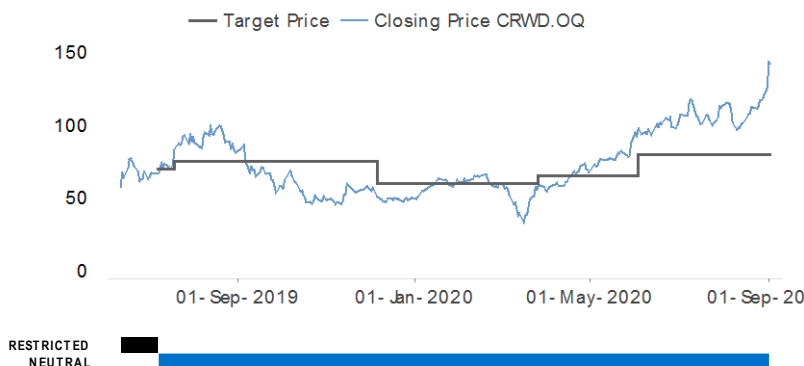
AVGO.OQ	Closing Price	Target Price	
Date	(US\$)	(US\$)	Rating
20-Nov-17	274.88		NR
05-Dec-17	261.65	335.00	O
19-Jul-18	210.37		R
06-Nov-18	228.25		NR
15-Nov-18	236.34	300.00	O
14-Mar-19	268.20	320.00	
09-Aug-19	275.73		R
11-Nov-19	312.75		NR
14-Jun-20	300.25	400.00	O

\* Asterisk signifies initiation or assumption of coverage.

**3-Year Price and Rating History for CrowdStrike, Inc. (CRWD.OQ)**

CRWD.OQ	Closing Price	Target Price	
Date	(US\$)	(US\$)	Rating
12-Jun-19	58.00		R
08-Jul-19	66.91	70.00	N *
19-Jul-19	83.52	75.00	
06-Dec-19	50.89	60.00	
26-Mar-20	58.64	65.00	
03-Jun-20	98.10	80.00	

\* Asterisk signifies initiation or assumption of coverage.

**As of December 10, 2012 Analysts' stock rating are defined as follows:**

**Outperform (O)** : The stock's total return is expected to outperform the relevant benchmark\* over the next 12 months.

**Neutral (N)** : The stock's total return is expected to be in line with the relevant benchmark\* over the next 12 months.

**Underperform (U)** : The stock's total return is expected to underperform the relevant benchmark\* over the next 12 months.

\*Relevant benchmark by region: As of 10th December 2012, Japanese ratings are based on a stock's total return relative to the analyst's coverage universe which consists of all companies covered by the analyst within the relevant sector, with Outperforms representing the most attractive, Neutrals the less attractive, and Underperforms the least attractive investment opportunities. As of 2nd October 2012, U.S. and Canadian as well as European (excluding Turkey) ratings are based on a stock's total return relative to the analyst's coverage universe which consists of all companies covered by the analyst within the relevant sector, with Outperforms representing the most attractive, Neutrals the less attractive, and Underperforms the least attractive investment opportunities. For Latin America, Turkey and Asia (excluding Japan and Australia), stock ratings are based on a stock's total return relative to the average total return of the relevant country or regional benchmark (India - S&P BSE Sensex Index); prior to 2nd October 2012 U.S. and Canadian ratings were based on (1) a stock's absolute total return potential to its current share price and (2) the relative attractiveness of a stock's total return potential within an analyst's coverage universe. For Australian and New Zealand stocks, the expected total return (ETR) calculation includes 12-month rolling dividend yield. An Outperform rating is assigned where an ETR is greater than or equal to 7.5%; Underperform where an ETR less than or equal to 5%. A Neutral may be assigned where the ETR is between -5% and 15%. The overlapping rating range allows analysts to assign a rating that puts ETR in the context of associated risks. Prior to 18 May 2015, ETR ranges for Outperform and Underperform ratings did not overlap with Neutral thresholds between 15% and 7.5%, which was in operation from 7 July 2011.

**Restricted (R)** : In certain circumstances, Credit Suisse policy and/or applicable law and regulations preclude certain types of communications, including an investment recommendation, during the course of Credit Suisse's engagement in an investment banking transaction and in certain other circumstances.

**Not Rated (NR)** : Credit Suisse Equity Research does not have an investment rating or view on the stock or any other securities related to the company at this time.

**Not Covered (NC)** : Credit Suisse Equity Research does not provide ongoing coverage of the company or offer an investment rating or investment view on the equity security of the company or related products.

**Volatility Indicator [V]** : A stock is defined as volatile if the stock price has moved up or down by 20% or more in a month in at least 8 of the past 24 months or the analyst expects significant volatility going forward.

Analysts' sector weightings are distinct from analysts' stock ratings and are based on the analyst's expectations for the fundamentals and/or valuation of the sector\* relative to the group's historic fundamentals and/or valuation:

**Overweight** : The analyst's expectation for the sector's fundamentals and/or valuation is favorable over the next 12 months.

**Market Weight** : The analyst's expectation for the sector's fundamentals and/or valuation is neutral over the next 12 months.

**Underweight** : The analyst's expectation for the sector's fundamentals and/or valuation is cautious over the next 12 months.

*\*An analyst's coverage sector consists of all companies covered by the analyst within the relevant sector. An analyst may cover multiple sectors.*

Credit Suisse's distribution of stock ratings (and banking clients) is:

#### Global Ratings Distribution

Rating	Versus universe (%)	Of which banking clients (%)
Outperform/Buy*	50%	(33% banking clients)
Neutral/Hold*	37%	(28% banking clients)
Underperform/Sell*	12%	(19% banking clients)
Restricted	2%	

*\*For purposes of the NYSE and FINRA ratings distribution disclosure requirements, our stock ratings of Outperform, Neutral, and Underperform most closely correspond to Buy, Hold, and Sell, respectively; however, the meanings are not the same, as our stock ratings are determined on a relative basis. (Please refer to definitions above.) An investor's decision to buy or sell a security should be based on investment objectives, current holdings, and other individual factors.*

#### Important Global Disclosures

Credit Suisse's research reports are made available to clients through our proprietary research portal on CS PLUS. Credit Suisse research products may also be made available through third-party vendors or alternate electronic means as a convenience. Certain research products are only made available through CS PLUS. The services provided by Credit Suisse's analysts to clients may depend on a specific client's preferences regarding the frequency and manner of receiving communications, the client's risk profile and investment, the size and scope of the overall client relationship with the Firm, as well as legal and regulatory constraints. To access all of Credit Suisse's research that you are entitled to receive in the most timely manner, please contact your sales representative or go to <https://plus.credit-suisse.com>.

Credit Suisse's policy is to update research reports as it deems appropriate, based on developments with the subject company, the sector or the market that may have a material impact on the research views or opinions stated herein.

Credit Suisse's policy is only to publish investment research that is impartial, independent, clear, fair and not misleading. For more detail please refer to Credit Suisse's Policies for Managing Conflicts of Interest in connection with Investment Research: <https://www.credit-suisse.com/sites/disclaimers-ib/en/managing-conflicts.html>.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

Credit Suisse has decided not to enter into business relationships with companies that Credit Suisse has determined to be involved in the development, manufacture, or acquisition of anti-personnel mines and cluster munitions. For Credit Suisse's position on the issue, please see <https://www.credit-suisse.com/media/assets/corporate/docs/about-us/responsibility/banking/policy-summaries-en.pdf>.

The analyst(s) responsible for preparing this research report received compensation that is based upon various factors including Credit Suisse's total revenues, a portion of which are generated by Credit Suisse's investment banking activities

Please refer to the firm's disclosure website at <https://rave.credit-suisse.com/disclosures/view/selectArchive> for the definitions of abbreviations typically used in the target price method and risk sections.

*See the Companies Mentioned section for full company names*

Credit Suisse currently has, or had within the past 12 months, the following as investment banking client(s): CRWD.OQ, AVGO.OQ

Credit Suisse provided investment banking services to the subject company (CRWD.OQ, AVGO.OQ) within the past 12 months.

Within the last 12 months, Credit Suisse has received compensation for non-investment banking services or products from the following issuer(s): AVGO.OQ

Credit Suisse has managed or co-managed a public offering of securities for the subject company (AVGO.OQ) within the past 12 months.

Within the past 12 months, Credit Suisse has received compensation for investment banking services from the following issuer(s): CRWD.OQ, AVGO.OQ

Credit Suisse expects to receive or intends to seek investment banking related compensation from the subject company (AVGO.OQ) within the next 3 months.

Credit Suisse currently has, or had within the past 12 months, the following issuer(s) as client(s), and the services provided were non-investment-banking, securities-related: AVGO.OQ

Credit Suisse currently has, or had within the past 12 months, the following issuer(s) as client(s), and the services provided were non-investment-banking, non securities-related: AVGO.OQ

Credit Suisse or a member of the Credit Suisse Group is a market maker or liquidity provider in the securities of the following subject issuer(s): AVGO.OQ, CRWD.OQ



A member of the Credit Suisse Group is party to an agreement with, or may have provided services set out in sections A and B of Annex I of Directive 2014/65/EU of the European Parliament and Council ("MiFID Services") to, the subject issuer (CRWD.OQ, AVGO.OQ) within the past 12 months.

For date and time of production, dissemination and history of recommendation for the subject company(ies) featured in this report, disseminated within the past 12 months, please refer to the link: <https://rave.credit-suisse.com/disclosures/view/report?i=548340&v=-3y8txka89imgi0k9nu2sf91ko>.

### Important Regional Disclosures

Singapore recipients should contact Credit Suisse AG, Singapore Branch for any matters arising from this research report.

The analyst(s) involved in the preparation of this report may participate in events hosted by the subject company, including site visits. Credit Suisse does not accept or permit analysts to accept payment or reimbursement for travel expenses associated with these events.

For Credit Suisse Securities (Canada), Inc.'s policies and procedures regarding the dissemination of equity research, please visit <https://www.credit-suisse.com/sites/disclaimers-ib/en/canada-research-policy.html>.

Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment.

This research report is authored by:

**Credit Suisse Securities (USA) LLC** ..... Brad Zelnick ; Syed Talha Saleem, CFA ; Ray McDonough, CFA

Important disclosures regarding companies that are the subject of this report are available by calling +1 (877) 291-2683. The same important disclosures, with the exception of valuation methodology and risk discussions, are also available on Credit Suisse's disclosure website at <https://rave.credit-suisse.com/disclosures>. For valuation methodology and risks associated with any recommendation, price target, or rating referenced in this report, please refer to the disclosures section of the most recent report regarding the subject company.

This report is produced by subsidiaries and affiliates of Credit Suisse operating under its Global Markets Division. For more information on our structure, please use the following link: <https://www.credit-suisse.com/who-we-are>. This report may contain material that is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or which would subject Credit Suisse or its affiliates ("CS") to any registration or licensing requirement within such jurisdiction. All material presented in this report, unless specifically indicated otherwise, is under copyright to CS. None of the material, nor its content, nor any copy of it, may be altered in any way, transmitted to, copied or distributed to any other party, without the prior express written permission of CS. All trademarks, service marks and logos used in this report are trademarks or service marks or registered trademarks or service marks of CS or its affiliates. The information, tools and material presented in this report are provided to you for information purposes only and are not to be used or considered as an offer or the solicitation of an offer to sell or to buy or subscribe for securities or other financial instruments. CS may not have taken any steps to ensure that the securities referred to in this report are suitable for any particular investor. CS will not treat recipients of this report as its customers by virtue of their receiving this report. The investments and services contained or referred to in this report may not be suitable for you and it is recommended that you consult an independent investment advisor if you are in doubt about such investments or investment services. Nothing in this report constitutes investment, legal, accounting or tax advice, or a representation that any investment or strategy is suitable or appropriate to your individual circumstances, or otherwise constitutes a personal recommendation to you. Please note in particular that the bases and levels of taxation may change. Information and opinions presented in this report have been obtained or derived from sources believed by CS to be reliable, but CS makes no representation as to their accuracy or completeness. CS accepts no liability for loss arising from the use of the material presented in this report, except that this exclusion of liability does not apply to the extent that such liability arises under specific statutes or regulations applicable to CS. This report is not to be relied upon in substitution for the exercise of independent judgment. CS may have issued, and may in the future issue, other communications that are inconsistent with, and reach different conclusions from, the information presented in this report. Those communications reflect the different assumptions, views and analytical methods of the analysts who prepared them and CS is under no obligation to ensure that such other communications are brought to the attention of any recipient of this report. Some investments referred to in this report will be offered solely by a single entity and in the case of some investments solely by CS, or an associate of CS or CS may be the only market maker in such investments. Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, express or implied, is made regarding future performance. Information and estimates contained in this report reflect a judgment at its original date of publication by CS and are subject to change without notice. The price, value of and income from any of the securities or financial instruments mentioned in this report can fall as well as rise. The value of securities and financial instruments is subject to exchange rate fluctuation that may have a positive or adverse effect on the price or income of such securities or financial instruments. Investors in securities such as ADRs, the values of which are influenced by currency volatility, effectively assume this risk. Structured securities are complex instruments, typically involve a high degree of risk and are intended for sale only to sophisticated investors who are capable of understanding and assuming the risks involved. The market value of any structured security may be affected by changes in economic, financial and political factors (including, but not limited to, spot and forward interest and exchange rates), time to maturity, market conditions and volatility, and the credit quality of any issuer or reference issuer. Any investor interested in purchasing a structured product should conduct their own investigation and analysis of the product and consult with their own professional advisers as to the risks involved in making such a purchase. Some investments discussed in this report may have a high level of volatility. High volatility investments may experience sudden and large falls in their value causing losses when that investment is realised. Those losses may equal your original investment. Indeed, in the case of some investments the potential losses may exceed the amount of initial investment and, in such circumstances, you may be required to pay more money to support those losses. Income yields from investments may fluctuate and, in consequence, initial capital paid to make the investment may be used as part of that income yield. Some investments may not be readily realisable and it may be difficult to sell or realise those investments, similarly it may prove difficult for you to obtain reliable information about the value, or risks, to which such an investment is exposed. This report may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the report refers to website material of CS, CS has not reviewed any such site and takes no responsibility for the content contained therein. Such address or hyperlink (including addresses or hyperlinks to CS's own website material) is provided solely for your convenience and information and the content of any such website does not in any way form part of this document. Accessing such website or following such link through this report or CS's website shall be at your own risk.

This report is issued and distributed in **European Union (except Germany and Spain)**: by Credit Suisse Securities (Europe) Limited, One Cabot Square, London E14 4QJ, England, which is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority; **Spain**: Credit Suisse Securities, Sociedad de Valores, S.A. ("CSSSV") regulated by the Comisión Nacional del Mercado de Valores; **Germany**: Credit Suisse (Deutschland) Aktiengesellschaft regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht ("BaFin"); **United States**: Credit Suisse Securities (USA) LLC; **Canada**: Credit Suisse Securities (Canada), Inc.; **Switzerland**: Credit Suisse AG; **Brazil**: Banco de Investimentos Credit Suisse (Brasil) S.A. or its affiliates; **Mexico**: Banco Credit Suisse (México), S.A., Institución de Banca Múltiple, Grupo Financiero Credit Suisse (México) and Casa de Bolsa Credit Suisse (México), S.A. de C.V., Grupo Financiero Credit Suisse (México) ("Credit Suisse Mexico"). This document has been prepared for information purposes only and is exclusively distributed in Mexico to Institutional Investors. Credit Suisse Mexico is not responsible for any onward distribution of this report to non-institutional investors by any third party. The authors of this report have not received payment or compensation from any entity or company other than from the relevant Credit Suisse Group company employing them; **Japan**: by Credit Suisse Securities (Japan) Limited, Financial Instruments Firm, Director-General of Kanto Local Finance Bureau (Kinsho) No. 66, a member of Japan Securities Dealers Association, The Financial Futures Association of Japan, Japan Investment Advisers Association, Type II Financial Instruments Firms Association; **Hong Kong**: Credit Suisse (Hong Kong) Limited; **Australia**: Credit Suisse Equities (Australia) Limited; **Thailand**: Credit Suisse Securities (Thailand) Limited, regulated by the Office of the Securities and Exchange Commission, Thailand, having registered address at 990 Abdulrahim Place, 27th Floor, Unit 2701, Rama IV Road, Silom, Bangkok, Bangkok10500, Thailand, Tel. ; **Malaysia**: Credit Suisse Securities (Malaysia) Sdn Bhd; **Singapore**: Credit Suisse AG, Singapore Branch; **India**: Credit Suisse Securities (India) Private Limited (CIN no.U67120MH1996PTC104392) regulated by the Securities and Exchange Board of India as Research Analyst (registration no. INH 000001030) and as Stock Broker (registration no. INZ000248233), having registered address at 9th Floor, Ceejay House, Dr.A.B. Road, Worli, Mumbai - 18, India, T- ; **South Korea**: Credit Suisse Securities (Europe) Limited, Seoul Branch; **Taiwan**: Credit Suisse AG Taipei Securities Branch; **Indonesia**: PT Credit Suisse Sekuritas Indonesia; **Philippines**: Credit Suisse Securities (Philippines) Inc., and elsewhere in the world by the relevant authorised affiliate of the above.

#### Additional Regional Disclosures

**Australia**: Credit Suisse Securities (Europe) Limited ("CSSEL") and Credit Suisse International ("CSI") are authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority ("FCA") and the Prudential Regulation Authority under UK laws, which differ from Australian Laws. CSSEL and CSI do not hold an Australian Financial Services Licence ("AFSL") and are exempt from the requirement to hold an AFSL under the Corporations Act (Cth) 2001 ("Corporations Act") in respect of the financial services provided to Australian wholesale clients (within the meaning of section 761G of the Corporations Act) (hereinafter referred to as "Financial Services"). This material is not for distribution to retail clients and is directed exclusively at Credit Suisse's professional clients and eligible counterparties as defined by the FCA, and wholesale clients as defined under section 761G of the Corporations Act. Credit Suisse (Hong Kong) Limited ("CSHK") is licensed and regulated by the Securities and Futures Commission of Hong Kong under the laws of Hong Kong, which differ from Australian laws. CSHK does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. Investment banking services in the United States are provided by Credit Suisse Securities (USA) LLC, an affiliate of Credit Suisse Group. CSSU is regulated by the United States Securities and Exchange Commission under United States laws, which differ from Australian laws. CSSU does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. Credit Suisse Asset Management LLC (CSAM) is authorised by the Securities and Exchange Commission under US laws, which differ from Australian laws. CSAM does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. This material is provided solely to Institutional Accounts (as defined in the FINRA rules) who are Eligible Contract Participants (as defined in the US Commodity Exchange Act). Credit Suisse Equities (Australia) Limited (ABN 35 068 232 708) ("CSEAL") is an AFSL holder in Australia (AFSL 237237).

**Malaysia**: Research provided to residents of Malaysia is authorised by the Head of Research for Credit Suisse Securities (Malaysia) Sdn Bhd, to whom they should direct any queries on +.

**Singapore**: This report has been prepared and issued for distribution in Singapore to institutional investors, accredited investors and expert investors (each as defined under the Financial Advisers Regulations) only, and is also distributed by Credit Suisse AG, Singapore Branch to overseas investors (as defined under the Financial Advisers Regulations). Credit Suisse AG, Singapore Branch may distribute reports produced by its foreign entities or affiliates pursuant to an arrangement under Regulation 32C of the Financial Advisers Regulations. Singapore recipients should contact Credit Suisse AG, Singapore Branch at for matters arising from, or in connection with, this report. By virtue of your status as an institutional investor, accredited investor, expert investor or overseas investor, Credit Suisse AG, Singapore Branch is exempted from complying with certain compliance requirements under the Financial Advisers Act, Chapter 110 of Singapore (the "FAA"), the Financial Advisers Regulations and the relevant Notices and Guidelines issued thereunder, in respect of any financial advisory service which Credit Suisse AG, Singapore Branch may provide to you.

**EU**: This report has been produced by subsidiaries and affiliates of Credit Suisse operating under its Global Markets Division

In jurisdictions where CS is not already registered or licensed to trade in securities, transactions will only be effected in accordance with applicable securities legislation, which will vary from jurisdiction to jurisdiction and may require that the trade be made in accordance with applicable exemptions from registration or licensing requirements.

This material is issued and distributed in the U.S. by CSSU, a member of NYSE, FINRA, SIPC and the NFA, and CSSU accepts responsibility for its contents. Clients should contact analysts and execute transactions through a Credit Suisse subsidiary or affiliate in their home jurisdiction unless governing law permits otherwise.

CS may provide various services to US municipal entities or obligated persons ("municipalities"), including suggesting individual transactions or trades and entering into such transactions. Any services CS provides to municipalities are not viewed as "advice" within the meaning of Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. CS is providing any such services and related information solely on an arm's length basis and not as an advisor or fiduciary to the municipality. In connection with the provision of the any such services, there is no agreement, direct or indirect, between any municipality (including the officials, management, employees or agents thereof) and CS for CS to provide advice to the municipality. Municipalities should consult with their financial, accounting and legal advisors regarding any such services provided by CS. In addition, CS is not acting for direct or indirect compensation to solicit the municipality on behalf of an unaffiliated broker, dealer, municipal securities dealer, municipal advisor, or investment adviser for the purpose of obtaining or retaining an engagement by the municipality for or in connection with Municipal Financial Products, the issuance of municipal securities, or of an investment adviser to provide investment advisory services to or on behalf of the municipality. If this report is being distributed by a financial institution other than Credit Suisse AG, or its affiliates, that financial institution is solely responsible for distribution. Clients of that institution should contact that institution to effect a transaction in the securities mentioned in this report or require further information. This report does not constitute investment advice by Credit Suisse to the clients of the distributing financial institution, and neither Credit Suisse AG, its affiliates, and their respective officers, directors and employees accept any liability whatsoever for any direct or consequential loss arising from their use of this report or its content. No information or communication provided herein or otherwise is intended to be, or should be construed as, a recommendation within the meaning of the US Department of Labor's final regulation defining "investment advice" for purposes of the Employee Retirement Income Security Act of 1974, as amended and Section 4975 of the Internal Revenue Code of 1986, as amended, and the information provided herein is intended to be general information, and should not be construed as, providing investment advice (impartial or otherwise).

Copyright © 2020 CREDIT SUISSE AG and/or its affiliates. All rights reserved.

When you purchase non-listed Japanese fixed income securities (Japanese government bonds, Japanese municipal bonds, Japanese government guaranteed bonds, Japanese corporate bonds) from CS as a seller, you will be requested to pay the purchase price only.