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CISCO STEADY GROWTH PREVAILS

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Abstract

This report is part 2 of 2 of an Equity Research of Cisco, and contains the company valuation, comprised by: revenue forecast, wacc calculation, relative valuation, sensitivity analysis, scenario analysis and the final recommendation.

Keywords

Finance; Technology; Software; Network Infrastructure

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

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Valuation

Revenue Forecast

We will use the revenue breakdown described previously to employ growth assumptions as realistically as possible. Cisco's shift to the intended subscription-based business model has happened rather successfully from the start of 2015 (software subscription revenues have risen from 40% in 2015 to 79% in 2021). The analysis of this metric will be key to understand Cisco's revenue and gross margin evolution, as we will detail ahead.

For forecast purposes, we breakdown each business unit sales into:

$$Revenues = Cisco's\ Market \times Average\ Revenue\ per\ Unit$$

Moreover, because of the differences in nature of Cisco's business units, we identified 2 groups of sales drivers, given by the variable "Cisco's Market":

$$Cisco's\ Market = \#\ Enterprises\ \times \%\ Cisco's\ Market\ Share$$

for the Infrastructure Platforms business unit, and

$$Cisco's\ Market = \#\ Enterprises\ \times \%\ companies\ with\ hybrid\ cloud\ services \times \%\ Cisco's\ Market\ Share$$

for the Applications and Security business units. This difference is such that infers that the potential market for Cisco's Infrastructure Platforms is essentially all enterprises.

For the **number of enterprises,** we found more reliable information when using the number of large enterprises per geography (>2500 employees) as a proxy. Given that census do not occur simultaneously across the world we estimated that the number of large enterprises varies in proportion to the population size in each region. We then expect this value to grow at a constant rate. The share of **companies with hybrid cloud services**, was estimated according to U.S. figures. By 2021, 61% of companies use hybrid cloud services and we forecast a steady growth with a CAGR of around 3.6% until 2026E. Finally, after finding Cisco's market share across the segments, we calculated the average revenue per unit (ARPU), plugging in the total value of segment revenue in the equation.

Subscription Growth

Subscription revenue has grown at a CAGR of 10.5% from 2015 (subscriptions accounted for 25% of total revenues in 2015 and are now at 44%). During the same window, total revenue has grown at <1% CAGR. These numbers reflect the nature of Cisco's business shift – while revenue from its major business unit (Infrastructure Platform) is decreasing, subscription revenue has risen steeply. We estimate subscription revenue to account for 65% of total revenue by 2025E and software-subscription revenue to reach 90% by the same year. The company's RPO growth, as detailed above, supports this rise. Both Applications and Security segments will benefit from this shift: given that most of this business is software-related, we calculated the growth rate of subscriptions-from-software revenue and estimated ARPU growth rate anchored to this value, as explained for each business unit below.

Infrastructure Platforms

41%
40%

ARPU in this segment represents the replacement cost of ethernet switches and routers. We estimate that prices will rise according to inflation per geography, as customers seek new product updates and faster connection to run their business. The increase in ARPU is more than offset by a decrease in market share as Cisco's redirected business model dictates a loss of focus on one-time purchases, predominant in this segment. Thus, we estimate the segment to grow at a CAGR of 2%, slightly lower than the industry (4%), and a market share decrease to 38% by 2026E.

Applications

Given its nature, Cisco's attention to subscription revenue will favour the Applications segment. We therefore forecast ARPU to grow hand to hand with growth in software-subscription, added to the value of inflation per geography. Even though the company shows intentions to further develop this business unit, our view suggests that Cisco will not gain considerable market share in it. The pandemic provided a unique opportunity for WebEx to gain traction that the company missed and will not most likely gain back. Furthermore, the first-move advantage that companies like Amazon and Microsoft experienced on the cloud market will protect their business. We estimate the segment to grow at a CAGR of 9%, just shy of the industry's 12%, and a market share shallow rise to 4.5% by 2026E.

Security

Similar to the previous business unit, this one will see a positive consequence of Cisco's shift in business model. ARPU was thus estimated employing the same method. However, unlike before, we expect Cisco's market share to grow ever so slightly in direct consequence of its investments. The company has been a market leader since 2015 and is responsible for a large share of the industry (~20%). Additionally, Cisco has had a steep rise in enterprise agreements, which generate more revenue per existing customer (1,370 in 2017 to 4,581 in 2021) – for each security product a single customer purchases from Cisco, one enterprise agreement purchases 4.1. We estimate the segment to grow at a CAGR of 8%, above the industry's 7%, and a market share increase to 21% by 2026E.

Services and Other Products

Revenues from Services are then estimated as a constant percentage of revenue from the Infrastructure Platforms, as these come from post-sale services supplied by the company, mostly regarding maintenance on switches and routers.

The magnitude of the "Other Products" segmented is not material to be considered in our forecasted, thus we estimate them as 0.

Gross Margin

Over the last 2 years Cisco saw its gross margin shrink as a direct consequence of the shortage in supply of semiconductor chips. In 2021 orders from customers were up 33% whereas revenues were up merely 1%. Moreover, the company is paying upfront for parts it has not received yet and is trying to fill up its shelves to counterbalance supply constraints. In 2021 Cisco states that with these precautionary measures the company will lift its gross margin (64%) but, as we mentioned before, some of these will take time to be reflected on Cisco's income statement. We obtained data on the price growth of semiconductor chips (~1.6%) and estimated this rise to be constant over the next 2 years, yielding decrease in gross margin to 62% by 2023E. Since the company first mentioned its intentions to change its business model (in 2015) its gross margin

has risen from 58% to 62% - we estimate this rise to then kick in again once the shortage of chips stabilizes and, by 2026E, we expect the value to tend towards the average of software companies (64%).

We therefore forecast a rise in cost of sales as a percentage of revenue for the time being albeit limited to the short term – Cisco's shift in business model will increase its Gross Margin. By 2025E we estimate 65% of all revenue to come from subscriptions (a value at 44% for the time being) and such a business model is characterized by a higher fixed cost – lower variable cost structure. We estimate cost of sales as a percentage of revenue to then decrease after 2024E to about 38% and keep this downward trajectory through 2026E (35%).

R&D

R&D as a percentage of revenues has had an upward trajectory as a direct driver of subscription growth (12% in 2015 to 13% in 2021). Furthermore, R&D sustains both organic growth and acquisitions and the company states no intention to change this approach. As the company penetrates a more competitive software market (Cisco's market shares in both Application and Security segment, in 2021, is 3.5% and 18%, respectively, compared to Cisco's market share of 41% in the Infrastructure Platform segment), we estimate R&D to remain growing over the foreseeable future and reach 15% of revenues by 2026E.

SG&A

As a percentage of revenues, SG&A varies mostly with number of weeks in a fiscal year. As costs regarding wages and advertising have mostly risen at the inflation rate, we estimate this to remain true in the future.

Invested Capital

The largest accounts on the balance sheet, and by far the ones that impact valuation the most, are Goodwill and Deferred Revenue. These reflect two unique traits about Cisco: M&A activity and subscription revenue growth.

Cisco sits on a pile of cash ($24 billion), and as mentioned before, spends a fair share of it on the acquisition of smaller companies. We analysed how Cisco tends to overpay for these deals and, considering acquiree integration has worked well and the ease with each they generate cash (cash conversion cycle of 21 days), the company can afford to do so. We thus estimate Goodwill to keep rising similarly to what it has been doing in the past.

As mentioned in our analysis of the company's RPO, the rise in unbilled revenue (from $6.8 billion in 2019 to $8.7 billion in 2021) will drive subscription growth soon. Moreover, whilst subscription growth is rising at a CAGR of nearly 11%, overall revenues have grown at a CAGR of <1% over the same period. This will generate higher deferred revenue and, if Cisco is to sustain its target business model, this value can only go up.

The shift in business will have a ripple effect across the company's accounts. Subscription revenue requires less hardware and facilities, which will decrease the value of equipment per office (50% of PP&E comes from production and engineering equipment). Other Assets and Liabilities represent hedging investments the Cisco makes to protect them from exchange rate fluctuations – we estimate them to rise proportionately to revenues.

When analysing the company's ROIC we understand that Cisco has no value to gain from distributing more earnings than it has done in the past. The company's ROIC (~25%) consistently

exceeds required return from investment (~8%) – as such we estimated the company's invested capital by maintaining a payout ratio of around 55% (coherent with the company's historical average).

Discounted Cash Flows

For valuation purposes, we opted for the Discounted Cash Flows (DCF) approach as we believe it better allows us to capture future value creation. Not only does it entail significant detail with the ability to forecast year-on-year idiosyncrasies, as its meaning is enlarged after sensitivity and scenario analyses are performed.

We also opted for a valuation with the Weighted Average Cost of Capital (WACC) instead of the Adjusted Present Value (APV) as without the knowledge of future levels of Debt it becomes more complex to make assumptions regarding valuation.

We forecasted Cisco's revenue model from 2022 to 2036. This way we managed to reflect Cisco's expectations, as well as our views on them, as smoothly and effectively as possible. Both revenues and Core Result converge to a steady growth rate of around 4.2% in around 10 years' time. We applied a terminal growth rate of 4.24%, in accordance with long-term GDP nominal growth rates in the US.

Our analysis led us to a share price of $61.11 and consequently to issue a HOLD recommendation, as this price entails a possible 1-year return, given transaction with shareholders, of 9.5%. Because our estimates are dependent on several factors, we performed both sensitivity and scenario analysis. The different scenarios are described in a subsequent section of this report, along with the obtained share price.

WACC Calculation

To calculate the WACC, the following formula was employed:

$$WACC = \frac{E}{D+E} r_E + \frac{D}{D+E} r_D (1 - \tau_c)$$

Considering Cisco's capital structure over the past 7 years and excluding the atypical behaviour that derived from the pandemic, the company's Market Debt-To-Enterprise Value ratio lies at around 5%, which, deducting from 1, gives us a Market Equity-To-Enterprise-Value of 95%. As mentioned before, the company manifested no intentions of changing capital structure in the future and given their constant acquisition behaviour and dividend payments, it is reasonable to plug in these numbers in the formula above.

For the cost of debt, we analysed Cisco S&P credit rating of AA- investment-grade bonds and analysed the S&P Global Corporate Average Transition Rates (1981-2020), to see the probability of an AA bond to default within 1 year, which is 0,02%. With S&P Average Recovery rata in High technology sector, for senior unsecured bonds, in the period 2018-2020, we arrived at a 36% recovery rate for the industry, which allowed us to yield the loss given default. We then used Bloomberg terminal to find the yield to maturity of a 5y maturity bond without options, which was around 1.39%. This bond was chosen because there was no available 10- or 5-years bonds without options. The cost of debt was computed according to McKinsey valuation book, given by the formula:

$$r_D = ytm - pd * LGD$$

The computation yielded a cost of debt of ≈ 1.37%, in line with companies operating in the high

technology industry with AA rating, such as Amazon and Alphabet.

For the cost of equity, we employed the Capital Asset Pricing Model (CAPM), which is given by the formula:

$$r_E = r_F + \beta_E(MRP)$$

Firstly, we had to capture Cisco's Equity Beta. To do that, we gathered data on Cisco's stock price, as well as two proxies for the overall market – MSCI World [MSCI] and S&P 500 [INDEXSP].

We calculated returns since 2011 to obtain a large enough sample that is not biased by disruptive business cycles. We then calculated Cisco's rolling beta over a 1 through 5 years window which yielded results between 1.0 - 1.5 considering both MSCI and S&P 500.

A full look at the sample gave us a 95% confidence interval for Cisco's equity beta between 0.78 - 1.31 versus MSCI and 0.81 - 1.34 versus S&P 500. The wide range of viable values made us look at Cisco's competitors to get an industry asset beta. We calculated the confidence interval for the market represented by 6 companies: Cisco, Juniper, Palo Alto, Arista, Microsoft and Fortinet.

Before averaging it all out, we unlevered the betas. Knowing the cost of debt, we can plug the numbers in the CAPM formula to obtain the debt Beta and, assuming that the beta on tax shields is the same as the industry beta, we obtained an industry asset beta of 1.004.

With the beta of debt, and after re-leveraging the average industry beta, we reached a beta of 1.05 for Cisco's equity.

Finally, we took a Market Risk Premium of 6.89% (Bloomberg) and we obtained a return on equity of 8.62%.

With all the variables available, considering an income tax rate of 28%, we settled Cisco's WACC at 8.27%.

Relative Valuation

Regarding relative valuation, we followed a three-pronged approach: self-comparison, peer-comparison and market-comparison.

For self-comparison we obtained data on historical values since 2000 about market capitalization, Price-to-earnings (P/E) ratio and earnings. The figure plots the relation between the values – Cisco has exhibited a stable P/E ratio of ~20x (the odd value is explained by the Dot Com internet bubble in the early 00s).

For peer-comparison we analysed Cisco's competitors: Arista Networks, Palo Alto, Fortinet, Microsoft, and Juniper Networks. Looking at the most recent data available in company reports, we obtained data for P/E, Enterprise Value-to-EBITDA (EV/EBITDA), EV/EBIT, EV/Revenue ratios and Market Capitalization. Straight away we see that Cisco has the lowest P/E, EV/EBITDA and EV/EBIT multiples (excluding Fortinet who has a lower EV/EBITDA multiple of 10.4x). A weighted average gives us a P/E ratio of 36.0x, much higher than Cisco's (as are the remaining multiples – EV/EBITDA: 23.6x *vs.* Cisco's 11x, EV/EBIT: 29.4x *vs.* Cisco's 11x, EV/Revenues: 11.8x *vs.* Cisco's 4.1x. These values would yield a share price of $90.37, $74.38, $88.71, and $139,04 respectively. The Company is undervalued in relation to its peers, however, due to the large differences in company sizes, different business models and unusually high multiples, the relative valuation does not allow for sensible results. When comparing with the S&P, its P/E

multiple of 25.7x would yield a Cisco share price of $64.53, meaning that the company is undervalued compared to the market.

Scenario Analysis

Base Scenario: Cisco's key presence in the market prevails. Share price: $61.11

Our base scenario is the one analysed in more detail above. We estimate that Cisco's turn to subscription-based revenues will be somewhat successful, as the past 5 years have hinted. This will in turn deviate focus away from the Infrastructure Platform segment, which will see Cisco lose some of its market leader share. Rising software subscription revenue will drive ARPU growth across the Applications and Security, however, only Cisco's Best (its Security segment) will settle the company as established market leader.

Conservative Scenario: Cisco fails to transition the revenue model to a subscription based one. Share price: $51.25

For our more conservative scenario we will assume Cisco fails its transition and will therefore keep relying on Infrastructure Platforms for most of its growth. The direct consequence of this is Cisco's top line will remain unchanged for the time being – Applications and Security revenue will not offset the loss of traction in the Infrastructure Platform market. Both Amazon, Microsoft and Zoom remain very clear market leaders in our Applications segment, thus we estimate market share to remain constant at 3,5%. We do not expect Cisco to see its market share shrink in the Security segment because the company already has enterprise agreements which affiliates customers and allows them to keep their bundle sales stable. Subscriptions as a % of software revenue, which in our base scenario reach 90%, hit a plateau much earlier, thus ARPU in the latter segments rises solely in accordance with inflation. We also weigh in Cisco's ability to fight back the chips supply shortage in our conservative scenario – we assume its mitigation measures do not work which sees the company's gross margin to damp to 58% over 2022E and 2023E, from which point on stables back to around its historical average of 60%.

Optimistic Scenario: Cisco's cloud services become a prevalent player in the market. Share price: $66.08

In our optimistic scenario, Cisco takes advantage of hybrid-work and cloud shock the business world has gone through over the last two years. We expect Cisco's presence in the Security segment to be contagious to its Applications revenues. WebEx and Cisco Plus therefore become prevalent in the market which is reflected in market share growth. We estimate Applications market share to rise to 6% through 2026E. In this scenario Cisco's mitigation measures towards the semiconductor chips shortage act and are effective. We thus expect a gross margin rise straight to the software companies' values, plateauing at 65%.

Sensitivity Analysis

We performed sensitivity analysis to our valuation by changing the values of terminal growth rate, WACC and target capital structure (already mentioned in the capital structure section) and percentage of software revenue that comes from subscription.

Analysing the results from the table below, we observe more abrupt changes in share price given changes in WACC (share price shifts $23 on average) than given changes on terminal growth rate ($8 average shift). Cisco's share price is therefore heavily dependent on investors' required return, a 5% raise sees our recommendation change from a 'HOLD' to a 'SELL' – the investor

should be on the look for the company's overall WACC. Moreover, the analysis tells us our model is robust on a terminal value growth rate basis – a 10% drop does not change our recommendation and given a 5% raise the company's returns mean the investor should buy the company's stock.

Growth Rate	WACC				
	7.50%	7.88%	**8.27%**	8.68%	9.12%
3.85%	69.32	63.29	58.06	53.49	49.46
4.04%	71.62	65.09	59.48	54.61	50.35
4.24%	74.33	67.18	61.11	55.90	51.37
4.45%	77.55	69.65	63.01	57.38	52.53
4.68%	81.46	72.58	65.25	59.10	53.87

Figure 1 – Sensitivity Analysis on WACC and Growth Rate. Source: Analysts' Estimates

In our final sensitivity analysis, we made the value of expected software revenue that comes from subscription change, given this driver's importance for growth in both the Applications and Security segments. In our base scenario we hit a plateau of 90% by 2026E – we made this value change from 80% (the current share for 2021, until 90%).

SW/Subscription Revenue		Share Price
Plateau at:	80%	59.15
	82%	59.55
	85%	60.16
	87%	60.56
	90%	61.16

Figure 2 – Sensitivity Analysis on Subscription Growth. Source: Analysts' Estimates

Analysing the results, we observe that our 'Hold' recommendation does not change given different levels of software-subscription revenue. This was expected given that even though revenue from software subscription plays a key role in the company's shift in business model, its existing business remains adding value to the company.

Conclusion

Our analysis suggests Cisco's future will depend on its ability to successfully migrate their business to a subscription revenue driven one – sensitivity analysis nonetheless indicates that the company's presence in the Infrastructure Platforms market will counterbalance some of the misshapen that may occur if the company fails the transition. As it stands, the company is set to grow moderately in its Applications segment, given the strong presence of competitors in the market, and steeply in its Security market, due to the already prevalence among peers. Subscription growth will support both segments, as Cisco deviates attention away from its Infrastructure Platforms segment. In Cisco's last Investor Day presentations, the company has announced its intentions to change the way they segment their revenues – their new breakdown parts revenues between: Secure, Agile Networks; Hybrid Work; End-to-End Security; Investment for the Future; Optimized Application Experiences; and Services. This goes to show how the company wants to prioritize their Better and Best segments.

Supply chain shortage will dictate the pace of Cisco's track as our scenario analysis shows how Cisco is dependent on its cost structure – the business model shift will naturally lift the company's gross margin but their mitigation measures to shortage of supply may take longer to kick in than the company expects.

Given this, we issue a ‘Hold’ recommendation for Cisco’s investors at the end of 2021. The investor should be on the look for the market’s reaction to the shortage supply and how Cisco’s orders are evolving – if the company starts its cost structure recovery sooner than expected, the investor could be looking at an opportunity for profiting by buying Cisco’s stock.