

VMware, Inc.

Recommendation BUY ★ ★ ★ ★ ★

Price
\$118.90 (as of Nov 02, 2017 4:00 PM ET)

12-Mo. Target Price
\$115.00

Report Currency
USD

Equity Analyst Angelo Zino

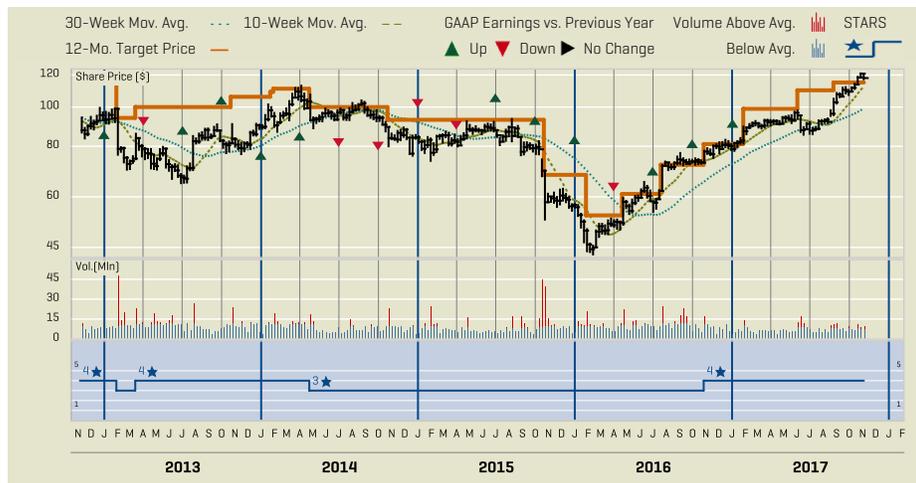
GICS Sector Information Technology
Sub-Industry Systems Software

Summary This subsidiary of EMC Corp. is a leading supplier of virtualization software, solutions and related services for use in information technology infrastructure.

Key Stock Statistics (Source: CFRA, S&P Global Market Intelligence (SPGMI), Company Reports)

52-Wk Range	\$121.09 - 74.85	Oper. EPS 2017E	5.08	Market Capitalization(B)	\$12.95	Beta	-0.05
Trailing 12-Month EPS	2.78	Oper. EPS 2018E	5.49	Yield (%)	NA	3-Yr Proj. EPS CAGR[%]	10
Trailing 12-Month P/E	NA	P/E on Oper. EPS 2017E	NA	Dividend Rate/Share	NA	SPGMI's Quality Ranking	B+
\$10K Invested 5 Yrs Ago	\$14,230	Common Shares Outstg.[M]	108.95	Institutional Ownership [%]	21		

Price Performance



Source: CFRA, S&P Global Market Intelligence

Past performance is not an indication of future performance and should not be relied upon as such.

Analysis prepared by Equity Analyst **A. Zino-CFA** on Aug 25, 2017 09:28 AM, when the stock traded at **\$100.83**.

Highlights

- ▶ We see sales rising 6.8% in FY 19 (Jan.) following our projection for a 10% increase in FY 18. VMW's pipeline remains healthy, but we note mixed results across most of the company's primary geographic regions. Specifically, we are seeing growth in EMEA, the Americas, and Asia. The company sees good traction transitioning from a virtualization company to a broader provider of cloud infrastructure and mobile offerings. We see newer virtualization software offerings driving growth, with license bookings for NSX and VSAN up more than 40% and 150% in the July quarter, respectively. We positively view recent cloud partnerships and opportunities with Amazon Web Services.
- ▶ We anticipate gross margins will remain in the mid-to-high 80% range in FY 18 and FY 19, compared with an 87% margin in FY 17. We forecast that operating expenses will remain high as the company invests heavily in R&D and SG&A, constraining EBITDA margins despite benefits from greater economies of scale.
- ▶ We forecast operating EPS of \$5.08 in FY 18 and \$5.49 for FY 19. We are encouraged by planned share repurchases.

Investment Rationale/Risk

- ▶ Our recommendation is Buy, given our view of attractive valuation coupled with improving growth prospects. We positively view better than expected results in VMW's end user computing business and see cloud offerings continuing to gain penetration. However, VMW is well positioned to leverage its dominance in the server virtualization market to other markets: software-defined data center, hybrid cloud and client management of mobile devices. These three market segments, in our view, will likely grow faster than most areas within the Technology sector over the next several years. We see valuation supported by net cash per share of near \$20.
- ▶ Risks to our recommendation and target price include a slowdown in the global economy, slower IT spending, loss of market share for server virtualization products, and higher operating expenses.
- ▶ Our 12-month target price is based on our relative P/E analysis. We derive a value of \$115 using a peer-average P/E multiple of 20.9X to our FY 19 operating EPS estimate. The ratio is below VMW's three- and five-year historical averages to reflect decelerating growth.

Analyst's Risk Assessment

LOW	MEDIUM	HIGH
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Our risk assessment reflects the company's short operating history with a new software technology, offset by our view of VMW's strong balance sheet with sizable cash holdings, and its position as a subsidiary of EMC Corp.

Revenue/Earnings Data

Revenue (Million U.S. \$)	1Q	2Q	3Q	4Q	Year
2019	--	--	--	--	--
2018	1,736	1,900	--	--	--
2017	--	--	--	--	--
2016	1,589	1,693	1,778	2,033	7,093
2015	1,511	1,597	1,672	1,868	6,647
2014	1,360	1,457	1,515	1,702	6,035

Earnings Per Share (U.S. \$)

Earnings Per Share (U.S. \$)	1Q	2Q	3Q	4Q	Year
2019	E 1.09	E 1.26	E 1.40	E 1.73	--
2018	0.56	0.81	E 1.27	E 1.60	E 5.49
2017	--	--	--	--	E 5.08
2016	0.38	0.62	0.75	1.04	2.78
2015	0.45	0.40	0.60	0.88	2.34
2014	0.46	0.38	0.45	0.75	2.04

Fiscal year ended Dec 31. Next earnings report expected: Mid Nov. EPS Estimates based on CFRA's Operating Earnings; historical GAAP earnings are as reported in Company reports.

Dividend Data

No cash dividends have been paid in the last year.

Business Summary June 02, 2017

CORPORATE OVERVIEW. VMware, Inc. [VMW] was founded in 1998 in Palo Alto, CA, and shipped its first product in 1999. The company was acquired by EMC Corp. [EMC] in 2004 for \$625 million. In 2007, EMC sold 10% of VMware's Class A common shares in an initial public offering for net proceeds of \$904 million. EMC also sold a combined 6% of the Class A common shares to Intel and Cisco for \$369 million. EMC still owns 79.6% of VMware's Class A common shares and 100% of Class B common shares as of December 2015. VMware operates as a stand-alone subsidiary of EMC. During the fourth quarter of calendar year 2016, EMC was acquired by privately-owned Dell.

VMW develops and markets virtualization software, solutions and related support services for use in information technology (IT) infrastructure. Its infrastructure virtualization platform, VMware vSphere, enables enterprises the ability to aggregate multiple servers, storage systems and networks into shared pools of resources that can be delivered dynamically. As a result, enterprises can build a computing infrastructure using building blocks of inexpensive industry-standard servers while obtaining high levels of utilization, thus reducing the total cost of ownership.

VMW defines its vision of a software-defined data center, in which the entire data center infrastructure will be virtualized and delivered as a service. This goes beyond what server virtualization software has done for the operating system and extends that to storage pool, networking, security, and management systems. The company's key product is VMware vCloud Suite. It simplifies the management of data center operations by analyzing the service requirements and automating the control of the data center hardware resources in meeting those service requirements. VMware vCloud Suite is based upon the VMware vSphere virtualization platform and is designed to work for private cloud, public cloud, and a combination of both, or hybrid cloud computing platforms.

VMW generates revenues through license and maintenance fees and professional services for its virtual infrastructure and management software. VMware markets its products through both a direct and indirect sales channel, which consists of distributors, resellers, system vendors and systems integrators.

MARKET PROFILE. Virtualization technology allows the separation of IT software from IT hardware. Traditionally, a specific operating system and related application software ran on the physical hardware. Virtualization was first introduced in the 1970s, to allow companies to increase utilization of centralized computing capacity of mainframe computers. However, the rise of servers and personal computers (PC) in the 1980s and 1990s allowed computing capacity to be distributed across a client-server environment, similar to a hub-and-spoke system. As a result, the development of virtualization technology was halted during the 1980s and most of the 1990s. Currently, virtualization software allows multiple virtual machines with different operating systems and application software to run on a single physical machine. The benefits of this method include lower equipment costs, physical space, energy bills and labor costs. In addition, the productivity of computing resources increases dramatically with virtualization.

In our opinion, VMware's two main competitors in the virtualization software industry are Microsoft in the data center/server market and Citrix Systems in the desktop market. Microsoft's strategy is to use virtualization products as an extension of its various operating systems, while VMware's strategy is to allow its virtualization products to work with any operating system. We think this distinction is important to customers, based on VMware's 95% penetration rate among Fortune 1000 companies. We think VMware will continue to be the leading player in virtualization products reflecting what we view as a first mover advantage, a solid research and development program, and strong sales relationships.

FINANCIAL TRENDS. From 2011-2016, the company's revenue increased at a CAGR of 17%, primarily driven by strength in licensing. VMW's operating margins widened due to better economies of scale, even as it increased employee headcount and R&D and other corporate expenses. From 2011-2016, gross margins remained in a tight range [mid to high 80% range]. We think that operating margins will gradually improve over the next five years, based on our outlook for leveraging fixed expenses and relatively stable gross margins. The company recently changed its fiscal year to January year-end.

Corporate Information
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Website

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Officers
Chrmn

M.S. Dell

CEO

P.P. Gelsinger

EVP & CFO

Z.C. Rowe

SVP, Secy & General Counsel

S.D. Smith

SVP & Chief Acctg Officer

K. Kryslar

Board Members

A.J. Bates

M.W. Brown

D.J. Carty

M.S. Dell

E.P. Durban

K.E. Dykstra

P.P. Gelsinger

P.A. Maritz

P.L. Sagan

Founded

1998

Employees

18,905

VMware, Inc.

Quantitative Evaluations						
Fair Value Rank	2	1	2	3	4	5
		LOWEST				HIGHEST
		Based on CFRA's proprietary quantitative model, stocks are ranked from most overvalued [1] to most undervalued [5].				
Fair Value Calculation	\$106.17	Analysis of the stock's current worth, based on CFRA's proprietary quantitative model suggests that VMW is slightly overvalued by \$12.73 or 10.7%.				
Volatility		LOW	AVERAGE	HIGH		
Technical Evaluation	BULLISH	Since July, 2017, the technical indicators for VMW have been BULLISH.				
Insider Activity		UNFAVORABLE	NEUTRAL	FAVORABLE		

Expanded Ratio Analysis				
	2016	2015	2014	2013
Price/Sales	4.71	3.63	5.94	7.47
Price/EBITDA	18.04	13.59	23.45	26.56
Price/Pretax Income	22.66	19.89	34.21	33.90
P/E Ratio	28.34	24.18	40.45	38.34
Avg. Diluted Shares Outsg.(M)	424	427	435	433

Figures based on fiscal year-end price

Key Growth Rates and Averages				
Past Growth Rate [%]	1 Year	3 Years	5 Years	
Sales	6.71	10.85	13.49	
Net Income	18.96	5.36	10.37	
Ratio Analysis [Annual Avg.]				
Net Margin [%]	NM	NM	NM	
% LT Debt to Capitalization	0.16	0.16	0.12	
Return on Equity [%]	14.81	13.32	14.06	

Company Financials Fiscal year ending Dec. 31										
Per Share Data [U.S. \$]	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Tangible Book Value	8.69	7.84	6.68	7.39	4.96	5.90	4.62	3.48	2.85	1.57
Free Cash Flow	5.30	3.69	4.25	5.10	3.90	3.73	2.39	2.06	1.34	0.67
Earnings	2.78	2.34	2.04	2.34	1.72	1.68	0.84	0.49	0.73	0.61
Earnings [Normalized]	2.27	2.13	1.73	1.71	1.29	1.07	0.62	0.34	0.51	0.42
Dividends	NA									
Payout Ratio [%]	NA									
P/E Ratio: High	29.9	39.9	55.3	42.4	69.1	66.3	NM	93.0	NM	NA
P/E Ratio: Low	15.6	22.5	37.2	27.7	46.2	44.1	48.9	39.1	23.6	NA

Income Statement Analysis										
[Million U.S. \$]										
Revenue	7,093	6,647	NA	5,207	4,605	3,767	2,857	NA	1,881	1,326
Operating Income	NA	NA	1,184	1,161	872	735	NA	219	313	235
Depreciation + Amortization	345	335	345	303	284	231	161	116	107	68
Interest Expense	26.00	26.00	24.00	4.00	5.00	NA	4.07	6.96	18.60	26.60
Pretax Income	NA	1,213	1,048	1,147	893	794	NA	223	319	240
Effective Tax Rate	19.5	17.8	NA	11.6	16.5	8.8	NA	11.8	9.1	9.3
Net Income	1,186	997	NA	1,014	NA	724	NA	NA	290	218
Net Income [Normalized]	962	911	753	NA	558	461	NA	136	204	150

Balance Sheet and Other Financial Data [Million U.S. \$]										
Cash	NA	NA	NA	6,175	4,631	NA	3,324	2,514	1,841	1,231
Current Assets	NA	9,360	8,882	7,681	NA	5,678	4,298	NA	2,390	1,603
Total Assets	NA	15,746	15,216	12,327	10,596	8,681	6,797	5,067	3,839	2,696
Current Liabilities	4,554	4,129	3,996	3,293	2,930	2,402	1,789	1,294	880	668
Long Term Debt	NA	NA	1,500	450	450	450	450	450	450	450
Total Capital	9,597	9,423	9,086	7,266	NA	5,220	4,258	NA	NA	1,791
Capital Expenditures	153	333	NA	345	234	NA	132	103	192	NA
Cash from Operations	2,381	1,899	NA	2,535	1,897	NA	1,174	NA	800	552
Current Ratio	2.27	2.27	2.22	2.33	NA	2.36	2.40	2.46	2.72	2.40
% Long Term Debt of Capitalization	0.002	0.002	0.002	NA	0.001	0.001	0.001	0.001	0.002	0.003
% Net Income of Revenue	NA	15.0	14.7	19.5	16.2	NA	12.5	9.7	15.4	16.5
% Return on Assets	5.81	NA	5.37	6.33	5.65	5.94	NA	3.08	5.98	7.66
% Return on Equity	14.8	12.9	12.3	NA	14.2	16.9	10.9	8.2	17.0	39.3

Source: S&P Global Market Intelligence. Data may be preliminary or restated; before results of discontinued operations/special items. Per share data adjusted for stock dividends; EPS diluted. E-Estimated. NA-Not Available. NM-Not Meaningful. NR-Not Ranked. UR-Under Review.

VMware, Inc.

Sub-Industry Outlook

Our fundamental outlook for the Systems Software sub-industry for the next 12 months is neutral. We expect revenues to increase at a modest pace in the coming quarters, in line with the overall information technology (IT) industry. IDC projected worldwide software growth of 6% in 2016, up from a flat comparison in 2015, and we see comparable gains in 2017. We see growth coming from enterprises, as companies upgrade/spend on data center infrastructure. We think systems software spending will be impacted by more interest in cloud computing, where we see related opportunities [e.g., new revenues] and risks [pricing pressures]. However, we see slow PC unit sales, at best, reflecting the category's weakness and challenges related to mobile.

From a corporate client perspective, we see potential benefits from a refresh cycle, as companies upgrade their aging computers along with operating systems to Microsoft's newer offerings, including Windows 10, which was released in July 2015. We note emerging markets have lower average selling prices than the global enterprise market segment.

We think sales of operating systems for servers will increase at a single-digit rate during the next 12 months. We also see moderate growth in virtualization software, as companies seek ways to reduce rising operational costs for their data centers caused by the proliferation of servers. We project that the virtualization software market will continue to experience stable, yet somewhat uninspiring, growth.

We think the systems software sub-industry will benefit from increased merger and acquisition activity in the IT industry, as many enterprise

IT companies have been positioning themselves as "one-stop shops" that provide comprehensive solutions. We think these companies will try to strengthen their offerings in cloud and security software, given the growing interest in broad and flexible functionality. In addition, many software companies have strong balance sheets with significant amounts of cash, in our view, and many have been buying back shares.

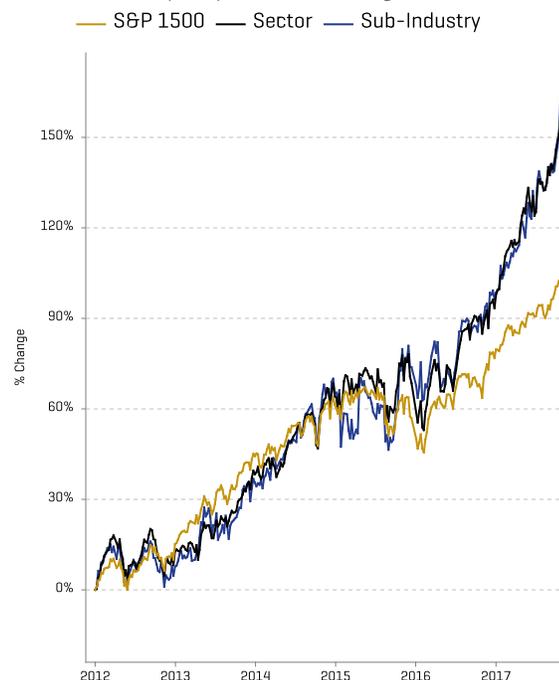
Year to date through June 30, 2017, the S&P 1500 Systems Software index increased 15.0%, versus the S&P 1500's increase of 7.8%. In 2016, the index increased 10.5%, very comparable to the increase of 10.6% for the S&P 1500.

--Scott Kessler

Industry Performance

GICS Sector: Information Technology Sub-Industry: Systems Software

Based on S&P 1500 Indexes
Five-Year market price performance through Nov 04, 2017



NOTE: All Sector & Sub-Industry information is based on the Global Industry Classification Standard (GICS).

Past performance is not an indication of future performance and should not be relied upon as such.

Source: S&P Global Market Intelligence

Sub-Industry: Systems Software Peer Group*: Systems Software

Peer Group	Stock Symbol	Exchange	Currency	Recent Stock Price (\$)	Stk. Mkt. Cap. (M \$)	30-Day Price Chg. (%)	1-Year Price Chg. (%)	P/E Ratio	Yield (%)	Return on Equity (%)	LTD to Cap (%)
VMware, Inc.	VMW	NYSE	USD	118.90	12,954	7.5	51.9	43	Nil	14.8	15.6
CA, Inc.	CA	NasdaqGS	USD	32.41	13,565	-3.5	5.1	19	3.1	14.0	32.2
Check Point Software Technologies Ltd.	CHKP	NasdaqGS	USD	106.62	17,427	-8.0	27.9	23	Nil	20.6	NA
Dell Technologies Inc.	DVMT	NYSE	USD	81.86	16,629	4.6	67.1	NM	Nil	-50.5	62.1
Fortinet, Inc.	FTNT	NasdaqGS	USD	38.61	6,714	5.1	24.1	81	Nil	4.0	NA
Proofpoint, Inc.	PFPT	NasdaqGM	USD	89.63	4,019	0.0	20.9	NM	Nil	NM	89.1
Red Hat, Inc.	RHT	NYSE	USD	120.99	21,409	8.1	61.8	72	Nil	19.7	37.4
ServiceNow, Inc.	NOW	NYSE	USD	124.34	21,123	5.5	47.0	NM	Nil	-94.7	NA
Symantec Corporation	SYMC	NasdaqGS	USD	29.38	18,055	-11.0	16.4	NM	1.0	-6.6	58.9
Tableau Software, Inc.	DATA	NYSE	USD	82.17	5,154	8.1	88.9	NM	Nil	-18.9	NA
Trend Micro Incorporated	TMIC.Y	OTCPK	USD	54.46	7,639	9.3	55.3	30	2.3	15.1	NA

*For Peer Groups with more than 10 companies or stocks, selection of issues is based on market capitalization.

NA-Not Available NM-Not Meaningful.

Note: Peers are selected based on Global Industry Classification Standards and market capitalization. The peer group list includes companies with similar characteristics, but may not include all the companies within the same industry and/or that engage in the same line of business.

Analyst Research Notes and other Company News
August 25, 2017

07:53 am ET... CFRA MAINTAINS BUY RECOMMENDATION ON SHARES OF VMWARE, INC. [VMW 100.83****]: We raise our 12-month target price by \$5 to \$115, on a near P/E of 20.9X to our FY 19 [Jan.] EPS view. We keep our FY 18 EPS estimate at \$5.08 and FY 19 at \$5.49. VMW posts Jul-Q EPS of \$1.19 vs. \$0.97, beating the \$1.16 consensus. Sales rose 12.2%, better than expected, driven by license revenue growth of 14%. We positively view improved results in VMW's end user computing business and see cloud offerings continuing to gain penetration. We note NSX and vSAN license bookings remain robust, growing over 40% and 150%. We see valuation aided by net cash per share of nearly \$20. /A. Zino-CFA

August 14, 2017

09:55 am ET... CFRA MAINTAINS BUY RECOMMENDATION ON SHARES OF VMWARE, INC. [VMW 95.13****]: We keep our 12-month target price at \$110, on a near P/E of 20X to our FY 19 [Jan.] operating EPS estimate. We increase our FY 18 to \$5.08 from \$4.93 and FY 19 to \$5.49 from \$5.34. VMW posts preliminary Jul-Q results and now sees sales up 11.9% to 12.6% from the prior year. License revenue is seen rising 12.9% to 14.4%, with EPS of \$1.17 at the midpoint of its guidance. VMW also raises its FY 18 outlook [sales up 10% and EPS of \$5.08]. We think VMW's NSX and vSAN offerings are witnessing good momentum and believe it is seeing good traction within Amazon Web Services. /A. Zino-CFA

July 17, 2017

VMware, Inc. announced the appointment of Amy Fliegelman Olli to the post of senior vice president and general counsel, effective August 28, 2017. In this role, Olli will head VMware's Global Legal Team and champion the company's commitment to integrity, ethics, compliance and risk management practices. Olli has more than 20 years of legal experience, with most of it focused in the enterprise technology sector. She joins VMware from Avaya, where she served as senior vice president and general counsel, leading the Avaya Law and Global Contracting organization.

July 10, 2017

VMware, Inc. announced the appointment of Claire Dixon to the post of senior vice president and chief communications officer, effective July 10, 2017. In this role, she will lead VMware's global communications team including public relations, industry analyst relations, stakeholder engagement, employee communications and thought-leadership campaigns. Dixon is a seasoned senior global communications leader with a strong track record of successfully driving change with globally recognized brands. She joins VMware from eBay, where she was vice president, Global Communications, leading global external communications including media, executive communications and thought-leadership, consumer PR and eBay's corporate content, digital and social channels.

June 02, 2017

10:07 am ET... CFRA MAINTAINS BUY OPINION ON SHARES OF VMWARE, INC. [VMW 97.4****]: We raise our 12-month target price to \$110 from \$99, on a near peers P/E of 20.6X our FY 19 [Jan.] EPS view. Shifting to FY estimates from calendar year, we see FY 18 EPS of \$4.93 and FY 19 at \$5.34. Our prior CY '17 and '18 EPS estimates were \$4.72 and \$4.87. VMW posts Apr-Q EPS of \$0.99, beating the \$0.96 consensus. Sales rose 9%, as license revenue grew 7%. We think NSX and vSAN offerings are witnessing good momentum, with bookings up 50% and 150%, respectively. We positively view opportunities with Amazon Web Services and see valuation aided by net cash per share above \$17. /A. Zino-CFA

January 27, 2017

10:21 am ET... S&P CAPITAL IQ KEEPS BUY OPINION ON SHARES OF VMWARE, INC. [VMW 88.02****]: We raise our 12-month target price to \$99 from \$81, on a near peers P/E of 20.3X our '18 EPS estimate. We increase our '17 EPS view to \$4.72 from \$4.65 and start '18 at \$4.87. VMW posts Q4 EPS of \$1.43 vs. \$1.26, beating the \$1.40 Capital IQ consensus. Sales rose 8.8% [up 13% including sequential change in unearned revenue], above expectations, led by Asia. We positively view bookings momentum for NSX [now a \$1B run rate] as well as within Hybrid cloud offerings [vCloud Air up 35%]. We see new products driving growth in '17 and note a new \$1.2B share repurchase

program. /A. Zino-CFA

January 26, 2017

VMware has announced several new appointments in the Middle East and North Africa (MENA) region, appointing Mohammed Darras as the new country manager for the UAE, Ahmed El Saadi to country manager, for North Africa, Levant, and Egypt, and promoting Ossama Eldeeb to senior manager, MENA Partner Organisation.

This announcement comes at a time when customer demand for public cloud infrastructure, applications, and services, is expected to double in the region with market research firm Gartner, predicting a rise from \$743 million in 2015 to \$1.73 billion in 2020. Mohammed Darras brings more than 19 years' sales experience in the region, most recently serving as regional sales manager for Cisco UAE. Ahmed El Saadi has more than 12 years' experience to his role at VMware, most recently serving as regional sales manager in Cyber Security for North Africa for Palo Alto Networks. With over 22 years' business and IT experience, Ossama Eldeeb has been promoted internally from senior partner business manager, VMware MENA.

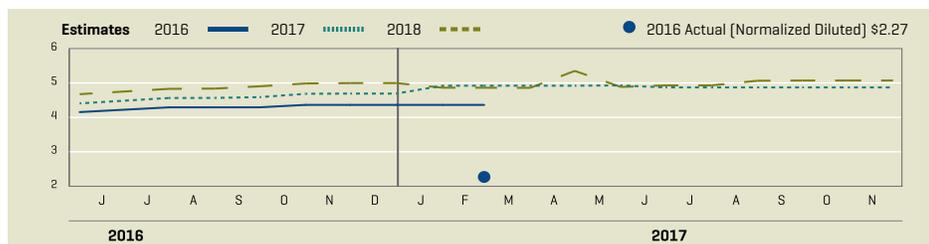
November 22, 2016

VMware, Inc. announced an expanded focus on communication service providers (CSPs) and telecommunications carriers (telcos), and the promotion of Shekar Ayyar to Executive Vice President and General Manager, Telco Group. Ayyar leads the company's effort to accelerate the digital transformation of the telecommunications industry through the company's innovative Cross-Cloud Architecture, and software-defined infrastructure for network functions virtualization (NFV). Ayyar reports to CEO Pat Gelsinger, and will also continue to lead the company's strategy and corporate business development activities. Ayyar holds more than 15 years of senior leadership experience in enterprise software, communications and semiconductors. Ayyar is responsible for aligning strategy across the company businesses as well as managing the company's mergers and acquisitions, and strategic investments. Under his leadership the company has executed on several acquisitions including Nicira and AirWatch, and established itself as a leading provider of NFV infrastructure. Prior to joining the company, Ayyar held senior roles at Lucent Technologies,BindView [acquired by Symantec], and Instantis [acquired by Oracle], spanning product management, marketing, and business development, and was also a consultant with McKinsey & Co.

Note: Research notes reflect S&P Global Market Intelligence's published opinions and analysis on the stock at the time the note was published. The note reflects the views of the equity analyst as of the date and time indicated in the note, and may not reflect S&P Global Market Intelligence's current view on the company.

VMware, Inc.

Wall Street Consensus Estimates



Wall Street Consensus Opinion

BUY/HOLD

Wall Street Consensus vs. Performance

For fiscal year 2017, analysts estimate that VMW will earn USD \$4.87. For fiscal year 2018, analysts estimate that VMW's earnings per share will grow by 4% to USD \$5.07.

Fiscal Years	Avg Est.	High Est	Low Est.	# of Est.	Est. P/E
2018	5.07	5.23	5.05	34	23.4
2017	4.87	4.87	4.87	1	24.4
2018 vs. 2017	▲4%	▲7%	▲4%	▲ 3300%	▼-4%

Forecasts are not reliable indicator of future performance.

Note: A company's earnings outlook plays a major part in any investment decision. S&P Global Market Intelligence organizes the earnings estimates of over 2,300 Wall Street analysts, and provides their consensus of earnings over the next two years, as well as how those earnings estimates have changed over time. Note that the information provided in relation to consensus estimates is not intended to predict actual results and should not be taken as a reliable indicator of future performance.

Note: For all tables, graphs and charts in this report that do not cite any reference or source, the source is S&P Global Market Intelligence.

Glossary

STARS

Since January 1, 1987, CFRA Equity and Fund Research Services, and its predecessor S&P Capital IQ Equity Research has ranked a universe of U.S. common stocks, ADRs (American Depositary Receipts), and ADSs (American Depositary Shares) based on a given equity's potential for future performance. Similarly, we have ranked Asian and European equities since June 30, 2002. Under proprietary STARS (Stock Appreciation Ranking System), equity analysts rank equities according to their individual forecast of an equity's future total return potential versus the expected total return of a relevant benchmark (e.g., a regional index [S&P Asia 50 Index, S&P Europe 350® Index or S&P 500® Index]), based on a 12-month time horizon. STARS was designed to meet the needs of investors looking to put their investment decisions in perspective. Data used to assist in determining the STARS ranking may be the result of the analyst's own models as well as internal proprietary models resulting from dynamic data inputs.

S&P Global Market Intelligence's Quality Ranking

(also known as **S&P Capital IQ Earnings & Dividend Rankings**) - Growth and stability of earnings and dividends are deemed key elements in establishing S&P Global Market Intelligence's earnings and dividend rankings for common stocks, which are designed to encapsulate the nature of this record in a single symbol. It should be noted, however, that the process also takes into consideration certain adjustments and modifications deemed desirable in establishing such rankings. The final score for each stock is measured against a scoring matrix determined by analysis of the scores of a large and representative sample of stocks. The range of scores in the array of this sample has been aligned with the following ladder of rankings:

A+	Highest	B	Below Average
A	High	B-	Lower
A-	Above Average	C	Lowest
B+	Average	D	In Reorganization
NR	Not Ranked		

EPS Estimates

CFRA's earnings per share (EPS) estimates reflect analyst projections of future EPS from continuing operations, and generally exclude various items that are viewed as special, non-recurring, or extraordinary. Also, EPS estimates reflect either forecasts of equity analysts; or, the consensus (average) EPS estimate, which are independently compiled by S&P Global Market Intelligence, a data provider to CFRA. Among the items typically excluded from EPS estimates are asset sale gains; impairment, restructuring or merger-related charges; legal and insurance settlements; in process research and development expenses; gains or losses on the extinguishment of debt; the cumulative effect of accounting changes; and earnings related to operations that have been classified by the company as discontinued. The inclusion of some items, such as stock option expense and recurring types of other charges, may vary, and depend on such factors as industry practice, analyst judgment, and the extent to which some types of data is disclosed by companies.

12-Month Target Price

The equity analyst's projection of the market price a given security will command 12 months hence, based on a combination of intrinsic, relative, and private market valuation metrics, including Fair Value.

CFRA Equity Research

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Abbreviations Used in Equity Research Reports

CAGR	- Compound Annual Growth Rate
CAPEX	- Capital Expenditures
CY	- Calendar Year
DCF	- Discounted Cash Flow
DDM	- Dividend Discount Model
EBIT	- Earnings Before Interest and Taxes
EBITDA	- Earnings Before Interest, Taxes, Depreciation & Amortization
EPS	- Earnings Per Share
EV	- Enterprise Value
FCF	- Free Cash Flow
FFO	- Funds From Operations

FY	- Fiscal Year
P/E	- Price/Earnings
P/NAV	- Price to Net Asset Value PEG Ratio - P/E-to-Growth Ratio PV - Present Value
R&D	- Research & Development ROCE - Return on Capital Employed ROE - Return on Equity
ROI	- Return on Investment
ROIC	- Return on Invested Capital
ROA	- Return on Assets
SG&A	- Selling, General & Administrative Expenses
SOTP	- Sum-of-The-Parts
WACC	- Weighted Average Cost of Capital

Dividends on American Depositary Receipts (ADRs) and American Depositary Shares (ADSs) are net of taxes (paid in the country of origin).

Qualitative Risk Assessment

Reflects an equity analyst's view of a given company's operational risk, or the risk of a firm's ability to continue as an ongoing concern. The Qualitative Risk Assessment is a relative ranking to the U.S. STARS universe, and should be reflective of risk factors related to a company's operations, as opposed to risk and volatility measures associated with share prices. For an ETF this reflects on a capitalization-weighted basis, the average qualitative risk assessment assigned to holdings of the fund.

STARS Ranking system and definition:

★★★★★ 5-STARs (Strong Buy):

Total return is expected to outperform the total return of a relevant benchmark, by a notable margin over the coming 12 months, with shares rising in price on an absolute basis.

★★★★★ 4-STARs (Buy):

Total return is expected to outperform the total return of a relevant benchmark over the coming 12 months, with shares rising in price on an absolute basis.

★★★★★ 3-STARs (Hold):

Total return is expected to closely approximate the total return of a relevant benchmark over the coming 12 months, with shares generally rising in price on an absolute basis.

★★★★★ 2-STARs (Sell):

Total return is expected to underperform the total return of a relevant benchmark over the coming 12 months, and the share price is not anticipated to show a gain.

★★★★★ 1-STAR (Strong Sell):

Total return is expected to underperform the total return of a relevant benchmark by a notable margin over the coming 12 months, with shares falling in price on an absolute basis.

Relevant benchmarks:

In North America, the relevant benchmark is the S&P 500 Index, in Europe and in Asia, the relevant benchmarks are the S&P Europe 350 Index and the S&P Asia 50 Index, respectively.

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STARS Stock Reports:

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Quantitative Stock Reports:

Quantitative recommendations are determined by ranking a universe of common stocks based on 5 measures or model categories: Valuation, Quality, Growth, Street Sentiment, and Price Momentum. In the U.S., a sixth sub-category for Financial Health will also be displayed. Percentile scores are used to compare each company to all other companies in the same universe for each model category. The five (six) model category scores are then weighted and rolled up into a single percentile ranking for that company. For reports containing quantitative recommendations refer to the Glossary section of the report for detailed methodology and the definition of Quantitative rankings.

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STARS Stock Reports:

Global STARS Distribution as of June 30, 2017

Ranking	North America	Europe	Asia	Global
Buy	37.4%	25.9%	36.6%	35.4%
Hold	55.1%	56.1%	39.4%	53.5%
Sell	7.5%	18.0%	24.0%	11.1%
Total	100.0%	100.0%	100.0%	100.0%

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