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Global

Industry

Wireline Networking
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Global Telecom Equipment Team

Industry Overview

June 29, 2004

*Morgan Stanley Global
Communicator — June 04*

GICS SECTOR	CONSUMER DISCRETIONARY
US Strategist Weight	9.8%
S&P 500 Weight	11.1%

GLOBAL TELECOM EQUIPMENT BEST IDEAS

Overweight

3Com	(COMS, \$6.10, O-V, \$11)
Andrew	(ANDW, \$19.93, O-V, \$23)
Avaya	(AV, \$15.94, O-V, \$24)
Corning	(GLW, \$12.49, O-V, \$14)
Nortel	(NT, \$4.74, O-V, \$8)
Polycom	(PLCM, \$21.46, O-V, \$26)
Powerwave	(PWAV, \$7.39, O-V, \$13)
Tekelec	(TKLC, \$16.22, O-V, \$23)

Underweight

Ciena	(CIEN, \$3.58, U-V, NA)
Nokia	(NOK, \$14.14, U, \$10)
Sycamore	(SCMR, \$4.19, U-V, NA)
Tektronix	(TEK, \$33.80, U-V, NA)
Tellabs	(TLAB, \$8.43, U-V, NA)

• June leading indicators improve

Four of our six leading indicators for the wireline equipment industry were positive in June, up from three in May. Our global carrier capex forecast was revised upward and carrier revenue estimates for 2004 and 2005 have improved. The most recent revision to global GDP estimates by our chief economist, Stephen Roach, was positive, and total connections were up in 1Q04. Two metrics deteriorated this month, as our enterprise equipment spending forecast fell to 13% YoY growth from 15% last month and communications equipment new order data was below the seasonal norm for May.

• We forecast a 9% increase in 2004 global capex, up from 8% last month

Our 2004 global capex estimate indicates 9% YoY growth, up from our May estimate of an 8% annual increase. On a constant-currency basis, we forecast growth of 5% in 2004, an increase from 4% last month. Our global *wireline* forecast stands at 3% in 2004, unchanged from May.

• U.S. enterprise spending forecast at 13% growth for 2004

Morgan Stanley U.S. economist, Dick Berner, forecasts 13% growth for enterprise equipment spending in 2004, down 170 bps from May. Mr. Berner's 2005 growth estimate is unchanged at 11%.

• Global Wireline Networking industry views

Our telecom equipment industry views are Cautious for Europe and China and Attractive for North America. We view the India, Japan, and Korea industries as In-Line, as we believe valuations for the group remain better than for most of their global peers.



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Morgan Stanley Global Communicator — June 04

Summary and Investment Conclusion

Telecom equipment industry fundamentals show stable signs, with positive trends outweighing negative ones. Our leading indicators suggest an improving outlook for 2H04 and 2005. Our CIO survey work and industry checks indicate we are at the beginning of a recovery in enterprise networking spending. Morgan Stanley's US Economist, Richard Berner, expects corporate spending to be up 13% in 2004 and 11% in 2005.

Our Leading Indicators Are Positive

Four of our six leading indicators for the wireline equipment industry are positive in June, an improvement from May (see page 7). Our global carrier capex forecast was revised upward, and carrier revenue estimates for 2004 and 2005 have improved. The most recent revision to global GDP estimates by our chief economist, Stephen Roach, was positive, and total connections were up in 1Q04. Two metrics deteriorated this month as our enterprise equipment spending forecast fell to 13% YoY growth from 15% last month and communications equipment new-order data was below the seasonal norm for May.

Global Capex — Wireless Growth Continues

Our revised 2004 global capex forecast stands at \$170 billion, up 9% YoY, an increase of 50 bps from May. Upward revisions in APAC, EMEA, Japan and Latin America were somewhat offset by declines in North American spending expectations. Foreign currency exchange continues to be a factor in boosting YoY increases

— excluding the effects of foreign exchange, our 2004 estimate is reduced to 5% growth on a constant-currency basis, up from 4% in May.

Our 2005 estimate highlights our concern for decelerating growth, indicating a flattish comparison to 2004, down 10 bps from our May forecast, with most regions expecting modest increases or decreases compared to 2004 expectations.

Exhibit 1

Global Capex Estimate Changes

	2004E		2005E		
	Current	Previous	Current	Previous	
Wireline Capex	3%	3%	2%	3%	
Wireless Capex	16%	14%	-2%	-3%	
Total Global Capex	9%	8%	0%	0%	

E = Morgan Stanley Research Estimates

Source: Company data, Morgan Stanley Research

Our view of the North American Wireline Networking Equipment and Wireless Infrastructure industries is Attractive. We view the European telecom equipment industry as Cautious. We view the China telecom industry as Cautious and the Indian, Japanese, and Korean telecom industries as In-Line. We have Overweight-V ratings on 3Com, Andrew, Avaya, Corning, Nortel, Polycom, Powerwave and Tekelec. We have Underweight-V ratings on the stocks of CIENA, Sycamore, Tektronix and Tellabs and an Underweight rating on the stock of Nokia.

Exhibit 2

Telecom Equipment Best Ideas — Overweight Rated Stocks

Company	Ticker	Rating/Target	Analyst	Thesis
3Com	COMS	O-V/\$11	Alkesh Shah	We expect sequentially improving results on an increased contribution from JV-sourced products and operating leverage could provide upside to our 2005 estimates. We still expect choppy results and a bumpy ride, but with enterprise spending poised for a rebound, 3Com remains one of our top picks.
Andrew Corp.	ANDW	O-V/\$23	Arindam Basu	We view Andrew as one of the best plays on network capacity expansion in our coverage universe. Our rating and \$23 price target reflects attractive valuation based on our DCF fair value estimate and discount to comps. Orders and revenue improved throughout F2Q04 (March). Pricing pressure appears to be moderating across business lines, and we continue to be comfortable with Andrew's position in the RF Footprint.
Avaya	AV	O-V/\$24	Alkesh Shah	Avaya is our top pick in the enterprise voice over Internet protocol (VoIP) market, and we expect sequentially improving results to drive AV shares higher in 2004. In addition to valuation, we like Avaya for three reasons: (1) a play on improving enterprise spending trends; (2) a significant installed base that gives it a competitive advantage in the transition to VoIP; and (3) operating leverage that should drive EPS to \$0.86 in F2005 from \$0.42 in F2004.
Corning	GLW	O-V/\$14	Arindam Basu	Shares of GLW have appreciated only 5% since the beginning of the year, with 12%+ potential upside from current levels to our DCF fair value estimate of \$14. Our 2004 EPS and sales estimates have increased 112% and 17%, respectively, leading to lower multiples.
Nortel Networks	NT	O-V/\$8	Alkesh Shah	We expect the restatement process should weigh on shares, but believe the company's positive business outlook is unchanged. Announced contract wins coupled with an improving business and spending outlook keeps us constructive on shares. Exposure to enterprise and carrier migration to IP technologies, and participation in 3G upgrades for either CDMA or GSM, lead us to believe that NT is set to capitalize on areas of growth within carrier and enterprise budgets.
Polycom	PLCM	O-V/\$26	Alkesh Shah	We believe PLCM should benefit from improving enterprise-spending trends, increasing demand for collaborative tools like IP-video communications, and operating leverage. We believe revenue and earnings momentum, leverage and positive earnings revisions could push shares toward the top of our trading range, or \$26.
Powerwave	PWAV	O-V/\$13	Arindam Basu	We believe shares are attractively valued based on current multiples as well as our \$13 DCF fair value estimate. Verizon's EV-DO wireless broadband solution and the likely competitive responses in North America, as well as W-CDMA network rollouts in Europe should drive industry strength during 2H04. PWAV's growth should be fueled by 7 ongoing trials and Ericsson W-CDMA business ramp during 2H04.
Tekelec	TKLC	O-V/\$23	Alkesh Shah	We believe TKLC should benefit from an improving carrier-spending outlook for 2004, which includes our expectation for a move by carriers toward packet telephony. Further, as wireless number portability gains steam in North America, we believe signal quality may be one of the key determining factors, meaning TKLC should benefit from both carriers that need to add database and signaling capacity, as well as from those that need to boost signal quality to improve service.

Source: Morgan Stanley Research. For full financial models and a discussion, if applicable, of the valuation methods used to determine the fair value and/or price targets included in this summary and the risks related to achieving these targets, please refer to the latest published research on these stocks.

Rating: O = Overweight, E = Equal weight, U = Underweight, V = More Volatile

Wireline Networking Equipment – June 29, 2004

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Exhibit 3

Telecom Equipment Best Ideas — Underweight Rated Stocks

Company	Ticker	Rating/Target	Analyst	Thesis
CIENA	CIEN	U-V/NA	Alkesh Shah	Although new contract wins may intermittently move the stock up, current valuation and fundamentals of owning CIENA relative to other names in the industry is weighted more heavily to the downside, in our opinion. We believe the integration risk associated with the acquisitions is relatively high, given the disparate geographic locations and the extension from the core toward the edge of the network.
Nokia	NOK	U/\$10	Angela Dean	Our proprietary market-share model suggests Nokia's market share drops to 28% by 2008. With an increasingly price-sensitive and lower-growth market, our EPS now show a five-year projected CAGR of -6.6%.
Sycamore Networks	SCMR	U-V/NA	Alkesh Shah	We believe optical networking demand should improve modestly in 2004; however, profitability remains difficult to forecast as revenue growth off a limited customer base remains challenging, in our view. Management recently indicated that it is exploring strategic options, which we believe includes partnerships, acquisitions or a buyout, as the company struggles to win new business in the face of more robust competition.
Tektronix	TEK	U-V/NA	Arindam Basu	We believe this is a strong company with limited upside. We would be increasing exposure to the shares below \$25 based on where the company has repurchased shares over the past year (\$22 weighted-average price), and believe potential upside is to \$36 based on our DCF fair value model.
Tellabs	TLAB	U-V/NA	Alkesh Shah	We see a mismatch between valuation and fundamentals with respect to shares. Long-term we expect TLAB to emerge as a survivor from a difficult period, but we do not expect the stock to participate in the upside that we model for the group over the next 6–12 months because its product portfolio does not fully address areas where we see increased carrier spending in 2004.

Source: Morgan Stanley Research. For full financial models and a discussion, if applicable, of the valuation methods used to determine the fair value and/or price targets included in this summary and the risks related to achieving these targets, please refer to the latest published research on these stocks.

Rating: O = Overweight, E = Equal-weight, U = Underweight, V = More Volatile

Wireline Telecom Equipment — Europe

BT updated investors on its 21st Century Network (21CN) plans on June 9, 2004. BT announced it is to start VoIP (Voice over IP) trials, with a view to start commercial migration in 2006, and FTTP (fiber to the premises) trials for new home starts. BT plans to have 1,000 customers involved in the VoIP trial by January 2005, increasing to 3,000 users by June 2005. For FTTP, BT's trial will include 3,000 homes with active connections to more than 1,500 residential users from October 2004 through September 2005. BT will use Marconi's softswitch, combined with its Access Hub product (working as a multiservice access node), for the VoIP trial, and ECI Telecom has been selected as the sole supplier for the FTTP trial.

We retain our Cautious view on the European telecom equipment industry.**Wireline Networking Equipment — North America**

Overall capex at North American carriers increased 5% YoY in C1Q, and we look for the trend to continue through the year. Our 2004 North American wireline forecast is stable compared to last month and indicates a 3% year-over-year decline.

We forecast an improvement in 2004 capex through the year, as we expect carriers to spend more on equipment in 2004, even if overall budgets are flattish, as capitalized labor as a percentage of capex should fall due to lower headcount at the service providers. Further, our US services analyst, Simon Flannery, sees the likelihood of a 4Q budget flush this year by carriers, which is not reflected in our capex estimates. An increase in enterprise spending over the coming year could also lead carriers to drive capex higher as they add capabilities and capacity to their existing networks.

U.S. Enterprise Spending Trends. Morgan Stanley's U.S. economist, Dick Berner, lowered his 2004 enterprise

equipment spending forecast to 13% growth in June, down from 15% in May — below our expectations for top-line growth at Cisco. His 2005 growth estimate is unchanged at 11%.

We maintain our Attractive view on the North American Wireline Networking Equipment industry.**Latin America**

Our Latin American wireline capex growth forecast increases to 39% for 2004, up from our May forecast calling for a 30% year-over-year increase. The higher growth forecast is a result of increased capex expectations from Telmex. We expect moderate growth in parts of the region, particularly in Brazil where our Latin America economist expects 2004 GDP growth of 4.4%. Relative to developed-market telcos, fundamentals in Brazil and Mexico remain favorable. Wireless and data substitution have not made meaningful impact anywhere except Venezuela and Chile, where wireless competition is more intense.


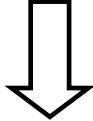
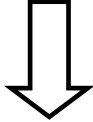
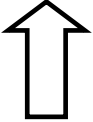
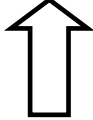
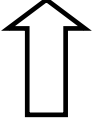
Japan

Our 2004 wireline capex estimate is improved from our previous forecast and indicates 14% YoY growth (up from 10% in May) to \$9.3 billion. Our 2005 estimate also increased to a flat comparison from our prior -4% estimate. The upward revisions reflect finalized 2003 figures as well as increases to our 2004 and 2005 estimates to account for continued broadband expansion and fiber-to-the-home efforts.

Asia/Pacific

For 2004, our forecast is unchanged at a year-over-year decline of -5%. The majority of carriers in the region are forecasting flat to declining capex compared to 2003, with the exception of Korea Telecom, Singapore Telecom and Telstra. For 2005, our forecast calls for a 2% increase compared to 2004, down from 3% in our May estimates, mainly due to a rounding difference to 2.4% from 2.5% last month.

Listening to Leading Indicators — June 2004

Indicator	Direction	Recent Data
Morgan Stanley Global Carrier Capex		Our 2004 <i>Global</i> carrier capex growth estimate was revised upward in June to 9% from our May forecast of 8%. The dollar impact again helps our comparison, as the increase is 5% YoY on a constant currency basis. <i>Wireline</i> was stable at 3%, and <i>Wireless</i> increased to 16% from 14% last month. Our 2005 forecast is unchanged and shows a flat year compared to our 2004 estimates.
U.S. Enterprise Equipment Spending Forecast		Morgan Stanley's U.S. economist, Dick Berner's 2004 enterprise equipment spending forecast was lowered for June at 13%, down from 15% growth in May. His 2005 growth estimate is unchanged at 11%.
U.S. Communications Equipment New Orders		May new orders fell 13% sequentially, off a tough April compare that was revised upward, and worse than the average May decrease of 2%.
Telecommunications Total Connections		1Q04 total connections were up 4.9% YoY and 1.2% sequentially, demonstrating signs of modest growth as 4Q03 total connections were up 4.4% YoY and 1.0% QoQ.
Morgan Stanley Global GDP Estimate		Morgan Stanley's chief economist, Stephen Roach, last revision for global 2004 & 2005 GDP growth was positive, up to 4.6% from 4.4% and 3.9% from 3.8%, respectively.
Global Carrier Revenue Revisions		Global Wireline carrier revenue estimates for 2004 and 2005 were revised upward from last month at \$631 billion and \$638 billion, respectively.

Source: Company Data, Morgan Stanley Research Estimates

Wireline Networking Equipment – June 29, 2004

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Global Carrier Capex Update

2004 Global Capex: Wireless Growth Continues

Our global capex estimate in 2004 now shows underlying growth of 8.7%, up from 8.2% in May. Our 2005 forecast fell by a modest 10 bps and still shows a flat year-on-year comparison, unchanged from last month.

Currency Influences our Global Forecasts. The weaker US\$ affects our global capex model, which is based in US\$. On a currency-adjusted basis, our global capex forecasts for 2004 indicate 4.9% annual growth (see Exhibit 4), up from May's 4.2%, and compared to our nominal growth rate, which shows 8.7% growth in 2004.

Exhibit 4

Global Capex Estimate Changes

	2004E		2005E	
	Current	Previous	Current	Previous
Reported (US \$)				
Wireline Capex	3.1%	3.3%	2.2%	2.7%
Wireless Capex	15.9%	14.4%	-2.3%	-2.5%
Total Global Capex	8.7%	8.2%	0.1%	0.2%
Constant Currency				
Wireline Capex	-0.2%	-0.4%	2.2%	2.7%
Wireless Capex	11.5%	9.8%	-2.3%	-2.5%
Total Global Capex	4.9%	4.2%	0.1%	0.2%

Source: Company data, Morgan Stanley Research

Wireline Spending

2004 Estimates Flat, 2005 Estimates Fall. Our 2004 growth rate on a constant currency basis improves to -0.2% from -0.4% last month, driven by increases in Japan and Latin America. On a dollar basis, wireline capex demonstrates growth of 3.1% compared to 3.3% last month. For 2005, we expect 2.2% growth, down from 2.7% in May, primarily on reductions to our North American estimates.

2004 — No Real Changes from May (see Exhibit 5).

Positive capex revisions in Japan and Latin America were offset by modest declines in EMEA and North America. Japan figures rose on upward revisions to both NTT and KDDI, as broadband buildouts continue. Latin America was boosted by additional capex from Telmex. Our EMEA wireline estimate was down primarily on a revised 2003 France Telecom figure that hurt the 2004 comparison. Our 2004 North America wireline forecast decreased on the

return of our Comcast estimates, which served to increase 2003 figure and hurt the 2004 compare. From a pure telecom perspective, our 2004 estimate of -3% growth is unchanged from last month.

2005 — Estimates Fall. Our 2005 wireline estimate declines to 2.2% from 2.7% last month, as increases in Japan and Latin America are offset by a decline in North America. Similar to our 2004 forecast, the re-inclusion of our Comcast estimates hurt the North American compare as our MSO forecast drops to -9% in 2005, down from -2% last month. Excluding the MSO figures, our wireline capex estimate is unchanged from May and indicates 7% year-over-year growth.

Exhibit 5

Global Wireline Estimate Changes

	2004E		2005E	
	Current	Previous	Current	Previous
Reported (US \$)				
Asia/Pacific	-5.3%	-5.3%	2.5%	2.6%
EMEA	15.0%	15.7%	1.9%	1.9%
Japan	13.8%	10.3%	-0.5%	-3.8%
Latin America	39.1%	30.1%	5.2%	1.6%
North America	-4.9%	-3.9%	2.6%	5.2%
Total Wireline Capex	3.1%	3.3%	2.2%	2.7%
Constant Currency				
Asia/Pacific	-7.8%	-8.0%	2.5%	2.6%
EMEA	5.4%	5.8%	1.9%	1.9%
Japan	6.6%	2.1%	-0.5%	-3.8%
Latin America	50.6%	39.7%	5.2%	1.6%
North America	-5.2%	-4.3%	2.6%	5.2%
Total Wireline Capex	-0.2%	-0.4%	2.2%	2.7%

Source: Company data, Morgan Stanley Research

Wireless Spending

2004 Continues to Improve; 2005 Still a Decline (see Exhibit 6). Our 2004 growth rate forecast on a constant-currency basis increases to 11.5% from 9.8% last month. On a dollar basis, this shows growth of 15.9% compared to 14.4% last month. For 2005, our operator analysts now forecast a decline of -2.3% versus -2.5% last month.

Upward Revisions to EMEA and Latin America Raise our 2004 Wireless Forecast. Within EMEA, our operator

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analysts now estimate capex will grow 16.5% in 2004 in constant currency versus 12.3% last month. The significant changes were to our operator forecasts for Vodafone, mmO2 and Orange. In Latin America, our operator analysts now forecast 36% capex growth in 2004 in constant currency, up from 29% last month — driven by increased capex estimates for America Movil and Telesp Celular.

EMEA Increases Follow Operator Reporting in May.

At Vodafone's full-year results on May 25, 2004, the company said it intends to spend around £5 billion worldwide in FY05 (Mar-05) versus £4.8 billion in FY04. Within this, despite estimating 3G will remain approximately 35% of group capex, the company sees Europe's proportion of 3G increasing from last year — the split was 50:50 with Japan/non-Japan in FY04. Our operator analysts now estimate the company's European capex will grow 8% YoY in FY05. mmO2 also reported its full-year results on May 18, 2004. The company said it expects capex to be slightly higher in FY04/05 (Mar-05) than FY03/04 driven by 3G investment in UK, partially offset by reduced 3G capex in Germany. Our operator analysts estimate this represents additional capex of approx £50–150m on top of the £1.2 billion spent in FY03/04.

Exhibit 6

Global Wireless Estimate Changes

	2004E		2005E	
	Current	Previous	Current	Previous
Reported (US \$)				
Asia/Pacific	10.8%	10.6%	-9.4%	-9.3%
EMEA	26.4%	22.0%	3.4%	3.7%
Japan	6.0%	7.3%	-0.3%	-0.3%
Latin America	39.2%	32.5%	-14.8%	-17.6%
North America	10.3%	10.3%	-1.5%	-1.9%
Total Wireless Capex	15.9%	14.4%	-2.3%	-2.5%
Constant Currency				
Asia/Pacific	9.9%	9.6%	-9.4%	-9.3%
EMEA	16.5%	12.3%	3.4%	3.7%
Japan	-0.8%	-0.8%	-0.3%	-0.3%
Latin America	35.8%	28.7%	-14.8%	-17.6%
North America	10.2%	10.2%	-1.5%	-1.9%
Total Wireless Capex	11.5%	9.8%	-2.3%	-2.5%

Source: Company data, Morgan Stanley Research

Capex Model Methodology

Our Morgan Stanley capex model is compiled each month from a bottom-up perspective by polling our worldwide telecom services analysts. Carrier specific estimates are rolled-up by region to create regional forecasts. These estimates are aggregated to create our global carrier capex forecast.

Exhibit 7

Global Carrier Capex Forecast

(\$US in millions)

Carrier Type	YY Growth in Capital Expenditures						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	-6%	-2%	2%	-3%	-2%	-4%	-6%
EMEA	-20%	0%	20%	3%	0%	-1%	0%
Japan	-19%	2%	9%	0%	-2%	-1%	0%
Latin America	-52%	0%	39%	-6%	3%	6%	6%
North America (US/Canada)	-38%	-22%	0%	1%	0%	-1%	0%
Global Capex	-28%	-9%	9%	0%	0%	-1%	-1%

Carrier Type	Capital Expenditures By Region						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	34,188	33,564	34,259	33,080	32,491	31,150	29,418
EMEA	41,408	41,530	50,007	51,327	51,074	50,542	50,600
Japan	18,615	18,994	20,771	20,688	20,271	20,170	20,145
Latin America	6,279	6,257	8,708	8,221	8,493	8,962	9,543
North America (US/Canada)	71,196	55,665	55,772	56,362	56,507	55,936	55,705
Global Capex	171,687	156,009	169,516	169,678	168,837	166,760	165,411

Carrier Type	Capital Expenditures / Sales						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	31%	25%	23%	21%	19%	18%	17%
EMEA	15%	13%	14%	14%	13%	13%	13%
Japan	17%	16%	17%	17%	17%	17%	17%
Latin America	17%	15%	18%	15%	15%	15%	15%
North America (US/Canada)	20%	16%	15%	15%	15%	14%	14%
Global Total	19%	16%	16%	16%	15%	15%	14%

Carrier Type	% of Total Capital Expenditures						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	20%	22%	20%	19%	19%	19%	18%
EMEA	24%	27%	29%	30%	30%	30%	31%
Japan	11%	12%	12%	12%	12%	12%	12%
Latin America	4%	4%	5%	5%	5%	5%	6%
North America (US/Canada)	41%	36%	33%	33%	33%	34%	34%
Global Total	100%	100%	100%	100%	100%	100%	100%

A = actual; E = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

Exhibit 8

Global Wireline Carrier Capex Forecast

(\$US in millions)

Carrier Type	YY Growth in Capital Expenditures						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	-9%	-7%	-5%	2%	-5%	-1%	-1%
EMEA	-29%	-10%	15%	2%	0%	0%	0%
Japan	-22%	13%	14%	0%	-3%	-1%	-1%
Latin America	-55%	-20%	39%	5%	2%	7%	5%
North America (US/Canada)*	-46%	-25%	-5%	3%	-1%	0%	-2%
Global Wireline Capex	-36%	-15%	3%	2%	-2%	0%	-1%

Carrier Type	Capital Expenditures by Region						
	2002A	2003E	2004E	2005E	2006E	2007E	2007E
Asia/Pacific	19,590	18,165	17,194	17,623	16,746	16,603	16,479
EMEA	24,004	21,708	24,955	25,421	25,530	25,447	25,505
Japan	7,245	8,185	9,315	9,269	8,973	8,845	8,794
Latin America	3,589	2,878	4,004	4,213	4,292	4,580	4,804
North America (US/Canada)*	49,181	37,023	35,211	36,114	35,705	35,669	35,050
Global Wireline Capex	103,609	87,959	90,679	92,640	91,245	91,144	90,632

Carrier Type	Capital Expenditures / Sales						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	28%	22%	20%	19%	18%	17%	17%
EMEA	15%	12%	13%	13%	13%	13%	13%
Japan	14%	15%	17%	17%	17%	17%	17%
Latin America	14%	10%	15%	14%	14%	15%	15%
North America (US/Canada)*	18%	14%	13%	14%	13%	13%	13%
Global Wireline Average	18%	14%	14%	15%	14%	14%	14%

Carrier Type	% of Total Capital Expenditures						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	19%	21%	19%	19%	18%	18%	18%
EMEA	23%	25%	28%	27%	28%	28%	28%
Japan	7%	9%	10%	10%	10%	10%	10%
Latin America	3%	3%	4%	5%	5%	5%	5%
North America (US/Canada)*	47%	42%	39%	39%	39%	39%	39%
Global Wireline Average	100%	100%	100%	100%	100%	100%	100%

A = actual; E = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

Exhibit 9

Global Wireless Carrier Capex Forecast

(\$US in millions)

Carrier Type	YY Growth in Capital Expenditures						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	-3%	5%	11%	-9%	2%	-8%	-11%
EMEA	-5%	14%	26%	3%	-1%	-2%	0%
Japan	-17%	-5%	6%	0%	-1%	0%	0%
Latin America	-46%	26%	39%	-15%	5%	4%	8%
North America (US/Canada)	-9%	-15%	10%	-2%	3%	-3%	2%
Global Wireless Capex	-11%	0%	16%	-2%	1%	-3%	-1%

Carrier Type	Capital Expenditures by Region						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	14,598	15,398	17,065	15,458	15,745	14,548	12,939
EMEA	17,404	19,821	25,052	25,906	25,545	25,095	25,096
Japan	11,370	10,810	11,455	11,419	11,298	11,325	11,351
Latin America	2,690	3,379	4,704	4,007	4,201	4,382	4,739
North America (US/Canada)	22,015	18,642	20,561	20,248	20,802	20,267	20,655
Global Wireless Capex	68,078	68,050	78,838	77,038	77,592	75,617	74,779

Carrier Type	Capital Expenditures / Sales						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	28%	29%	27%	22%	21%	19%	17%
EMEA	15%	14%	15%	14%	14%	13%	12%
Japan	20%	17%	17%	17%	16%	16%	16%
Latin America	24%	22%	22%	16%	15%	15%	15%
North America (US/Canada)	28%	21%	21%	19%	18%	16%	16%
Global Wireless Average	22%	19%	19%	17%	16%	15%	15%

Carrier Type	% of Total Capital Expenditures						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia/Pacific	21%	23%	22%	20%	20%	19%	17%
EMEA	26%	29%	32%	34%	33%	33%	34%
Japan	17%	16%	15%	15%	15%	15%	15%
Latin America	4%	5%	6%	5%	5%	6%	6%
North America (US/Canada)	32%	27%	26%	26%	27%	27%	28%
Global Wireless Average	100%	100%	100%	100%	100%	100%	100%

A = actual; E = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

Global Carrier Capex Update

Asia/Pacific

For 2004, our forecast is unchanged at a year-over-year decline of -5%. The majority of carriers in the region are forecasting flat to declining capex compared to 2003, with the exception of Korea Telecom, Singapore Telecom and Telstra.

For 2005, our forecast calls for a 2% increase compared to 2004, down from 3% in our May estimates, mainly due to a rounding difference to 2.4% from 2.5% last month.

Exhibit 10

Asia Pacific Carrier Capex Breakdown

(\$US in millions)

Carrier	YY Growth in Capital Expenditures						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia Pacific	-18%	-5%	6%	8%	0%	0%	0%
China	4%	1%	-14%	-4%	-11%	-2%	0%
India	-7%	-38%	-29%	-7%	-17%	-7%	-15%
Total	-9%	-7%	-5%	2%	-5%	-1%	-1%

Carrier	Capital Expenditures By Geography						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Asia Pacific	9,654	9,134	9,648	10,383	10,348	10,367	10,367
China	7,384	7,438	6,409	6,176	5,514	5,413	5,413
India	2,552	1,593	1,138	1,064	884	822	699
Total	19,590	18,165	17,194	17,623	16,746	16,603	16,479

Carrier	Capital Expenditures By Carrier						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Bharat Sanchar Nigam (BSNL) - Fixed	1,299	581	120	27	144	49	5
Bharti Tele-Ventures Ltd - Fixed	256	173	143	142	106	82	62
Chungghwa	1,241	937	700	904	1,031	1,043	1,043
China Telecom	7,384	7,438	6,409	6,176	5,514	5,413	5,413
Dacom	90	82	85	85	85	85	85
Hanaro	303	283	307	342	369	366	366
Korea Telecom	2,753	2,551	2,635	2,468	2,377	2,325	2,325
Mahanagar Telephone Nigam - Fixed	95	90	89	77	67	59	55
PCCW	207	201	213	222	230	248	248
PLDT	556	245	311	384	331	346	346
PT Telkom	629	1,064	1,004	1,016	819	810	810
Reliance Industries - Fixed	751	573	580	555	342	419	367
Singapore Telecom	863	699	1,057	1,306	1,294	1,295	1,295
Tata Teleservices - Fixed	31	59	88	138	98	85	81
Telecom Corp. of NZ	361	349	410	440	470	467	467
Telecom Malaysia	658	547	529	533	538	518	518
Telstra	1,991	2,175	2,397	2,684	2,806	2,865	2,865
Videsh Sanchar Nigam	121	118	117	125	127	129	129
Total	19,590	18,165	17,194	17,623	16,746	16,603	16,479

A = actual; E = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

EMEA

Our EMEA wireline capex forecast moves to a 15% increase in 2004 in US dollar terms, down from 16% last month, and following a 10% decline in 2003. However, the year-over-year comparisons are influenced by currency fluctuations, as we translate our forecasts into US dollars. In constant-currency terms, our forecast is for 5% growth in 2004, down from 6% last month, after a 22% decline in 2003. We expect 2% growth in 2005.

The changes to our model reflect slight reductions to 2004 wireline capex forecasts for Deutsche Telekom, British Telecom and Telecom Italia. We now forecast a 12.6% capex / sales level in aggregate for 2004 (versus 11.8% in 2003), rising to 13.0% by 2008.

Exhibit 11

European Carrier Capex Breakdown

(\$US in millions)

Carrier Type	YY Growth in Capital Expenditures						
	2002	2003e	2004e	2005e	2006e	2007e	2008e
CEEMEA	-38%	-13%	8%	-7%	-4%	0%	0%
Western Europe	-28%	-9%	16%	3%	1%	0%	0%
Total	-29%	-10%	15%	2%	0%	0%	0%

Carrier Type	Capital expenditures By Carrier Type						
	2002	2003e	2004e	2005e	2006e	2007e	2008e
CEEMEA	1,849	1,610	1,734	1,608	1,550	1,544	1,551
Western Europe	22,155	20,098	23,221	23,814	23,980	23,903	23,953
Total	24,004	21,708	24,955	25,421	25,530	25,447	25,505

Carrier	European Capex						
	2002	2003e	2004e	2005e	2006e	2007e	2008e
BEZEQ Wireline	189	217	160	119	99	110	126
BT	3,921	4,278	5,059	4,998	4,655	4,454	4,308
Cable & Wireless	757	303	402	404	392	405	418
Colt	619	231	292	321	355	372	392
Deutsche Telekom Wireline	3,629	3,498	4,877	4,950	5,147	5,122	5,175
France Telecom Wireline	3,709	2,322	2,668	3,218	3,256	3,205	3,367
KPN Wireline	585	642	743	808	880	954	1,019
MATAV Wireline	272	224	216	184	193	209	215
OTE Wireline	648	751	726	629	580	576	574
Portugal Telecom Wireline	383	360	390	405	423	440	432
Swisscom Wireline	491	546	584	609	639	625	614
Telecom Italia Wireline	2,942	3,137	3,146	3,139	3,309	3,452	3,382
TeleDenmark Wireline	685	697	703	723	710	703	697
Telefonica Wireline	2,065	2,035	1,997	1,959	1,968	1,950	1,966
Telekom Austria Wireline	322	341	332	323	312	311	305
Telenor Wireline	651	394	560	522	520	515	511
TeliaSonera Wireline	748	564	743	806	833	819	793
Telkom SA	455	520	632	631	619	609	601
TPSA Wireline	933	649	725	674	638	616	610
Total	24,004	21,708	24,955	25,421	25,530	25,447	25,505

A = actual; E = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

Global Carrier Capex Update

Japan

Our 2004 wireline capex estimate is improved from our previous forecast and indicates 14% YoY growth (up from 10% in May) to \$9.3 billion. Our 2005 estimate also increased to a flat comparison from our prior -4% estimate. The upward revisions reflect finalized 2003 figures as well as increases to our 2004 and 2005 estimates to account for continued broadband expansion and fiber-to-the-home efforts.

Exhibit 12

Japanese Carrier Capex Breakdown

(\$US in millions)

Carrier	YY Growth in Capital Expenditures						
	2002A	2003A	2004E	2005E	2006E	2007E	2008E
NTT*	-20%	13%	11%	-1%	-3%	-1%	0%
KDDI	-49%	7%	56%	7%	-4%	-6%	-5%
Total	-22%	13%	14%	0%	-3%	-1%	-1%

Carrier	Capital Expenditures by Carrier						
	2002A	2003A	2004E	2005E	2006E	2007E	2008E
NTT*	6,827	7,739	8,621	8,528	8,260	8,173	8,153
KDDI	418	445	695	741	713	672	641
Total	7,245	8,185	9,315	9,269	8,973	8,845	8,794

A = actual; E = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

* Former NTT I Company (East, West & Com) Basis. There was a change of accounting method for Japan Telecom since FY2000.

Latin America

Our Latin American wireline capex forecast increases from last month and indicates a 39% increase in 2004, up from our May forecast calling for a 30% year-over-year increase. The higher growth forecast is a result of increased capex expectations from Telmex.

Our 2005 estimate improves to 5% growth compared to 2% last month, again the result of upward revisions to our Telmex spending forecast.

Exhibit 13

Latin American Carrier Capex Breakdown

(\$US in millions)

Carrier	YY Growth in Capital Expenditures						
	2002A	2003E	2004E	2005E	2006E	2007E	2008E
Brasil Telecom	-41%	-11%	16%	-16%	-8%	6%	-2%
CANTV	98%	-70%	10%	37%	11%	11%	12%
Embratel	-30%	-42%	50%	5%	-1%	1%	3%
Telecom Argentina	++	++	++	++	++	++	++
Telefonica CTC Chile	-23%	-2%	9%	11%	5%	5%	5%
Telamar	-80%	-17%	20%	12%	-4%	23%	16%
Telmex	-50%	-4%	68%	7%	6%	2%	2%
Total (ex Telecom Argentina)	-55%	-20%	39%	5%	2%	7%	5%

Carrier	Capital Expenditures By Carrier						
	2002A	2003A	2004E	2005E	2006E	2007E	2008E
Brasil Telecom	657	586	680	570	525	555	543
CANTV	461	138	151	208	230	254	284
Embratel	351	203	305	320	316	320	329
Telecom Argentina	++	++	++	++	++	++	++
Telefonica CTC Chile	213	210	228	254	266	280	293
Telamar	718	594	712	795	766	945	1,093
Telmex	1,191	1,147	1,927	2,067	2,189	2,227	2,262
Total (ex Telecom Argentina)	3,589	2,878	4,004	4,213	4,292	4,580	4,804

A = actual; E = Morgan Stanley Research estimates.

Source: Company data, Morgan Stanley Research

++ Estimates for this company have been removed from consideration in this report because, under applicable law and/or Morgan Stanley policy, Morgan Stanley may be precluded from issuing such information with respect to this company at this time.

Global Carrier Capex Update

North America

Our 2004 North American wireline forecast is unchanged from May and indicates a 3% year-over-year decline. We note that these figures do not include recent announcements regarding spending from AT&T (which lowered its 2004 spending guidance from \$2.5 billion to \$1.8 billion) and SBC (which we believe could add approximately \$500 million of incremental capex to our 2005 estimates for its fiber deployment).

Our 2005 forecast is unchanged from May and indicates 7% year-over-year growth. We believe 2005 spending may climb higher as efforts to enable wireline networks for video delivery begin to occur as cable companies are now set to offer bundles including voice.

Exhibit 14

North American Carrier Capex Breakdown

(\$US in millions)

Carrier Type	YY Growth in Capital Expenditures							
	2002A	2003A	2004E	2005E	2006E	2007E	2008E	
RBOCs	-44%	-19%	-4%	7%	-2%	-1%	-4%	
IXCs	-64%	-37%	-8%	14%	4%	3%	3%	
non-RBOC ILECs	-30%	-7%	9%	-2%	2%	3%	0%	
CLECs	-85%	-46%	8%	9%	0%	1%	1%	
Total (excl. MSO)	-53%	-23%	-3%	7%	0%	1%	-1%	

Carrier Type	Capital Expenditures By Carrier Type							
	2002A	2003A	2004E	2005E	2006E	2007E	2008E	
RBOCs	20,930	16,851	16,194	17,270	16,911	16,810	16,190	
IXCs	8,914	5,630	5,185	5,920	6,138	6,336	6,550	
non-RBOC ILECs	3,896	3,617	3,950	3,853	3,920	4,022	4,023	
CLECs	813	440	475	520	520	525	530	
Total (excl. MSO)	34,553	26,537	25,804	27,563	27,489	27,694	27,294	

Carrier	Capital Expenditures							
	2002A	2003A	2004E	2005E	2006E	2007E	2008E	
Alltel Wireline	447	406	449	455	474	494	494	
AT&T (Ex Broadband and Wireless)	4,032	3,056	2,231	1,998	2,085	2,180	2,282	
BCE	2,376	2,276	2,506	2,386	2,431	2,506	2,506	
BellSouth Wireline	3,337	2,824	2,469	2,484	2,484	2,488	2,483	
CenturyTel	386	378	398	391	386	382	382	
Cincinnati Bell	176	126	137	137	137	136	136	
Citizens	289	244	265	273	281	289	289	
CommonWealth	53	47	48	58	59	61	62	
CTC Communications	69	80	80	80	80	80	80	
Earthlink	51	60	60	60	60	60	60	
Genuity	439	0	0	0	0	0	0	
ITC Deltacom	57	70	80	100	100	100	100	
Level 3 Communications	282	300	350	350	400	450	500	
MCI	2,400	600	1,000	2,000	2,040	2,111	2,185	
Pac West Telecomm	30	30	30	30	30	35	40	
Qwest	2,736	2,061	1,995	1,973	1,995	2,027	2,077	
SBC Wireline	6,734	5,146	5,040	4,985	4,850	4,736	4,625	
Sprint FON Group	2,200	1,674	1,604	1,571	1,613	1,595	1,583	
Telephone & Data Systems	168	139	148	152	152	155	155	
Time Warner Telecom	167	200	225	250	250	250	250	
Verizon	8,123	6,820	6,689	7,828	7,583	7,559	7,005	
Total	34,553	26,537	25,804	27,563	27,489	27,694	27,294	

A = actual; E = Morgan Stanley Research estimates

Source: Company data, Morgan Stanley Research

Wireline Networking Equipment

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Key Points

- We believe fundamentals in the wireline networking equipment industry have reached an inflection point and are turning more positive.
- We forecast global wireline spending to increase 3% in 2004, followed by a 2% increase in 2005. We forecast enterprise network spending to be up in the high single digits for 2004, with upside as high as 13% YoY.
- North American carriers, focused on fending off the cable threat to incumbent voice services, are beginning to explore ways to enable their networks to provide video — leading to network upgrades and higher wireline capex, in our opinion.
- We have an Attractive view on the North American Wireline industry, and maintain our Cautious view on the telecom equipment industry in Europe, as signals remain mixed for 2H04.

Morgan Stanley & Co. Incorporated ("Morgan Stanley") is currently acting as financial advisor to Telica in its announced proposed sale to Lucent Technologies.

Telica has agreed to pay fees to Morgan Stanley for its financial services, including transaction fees that are subject to the consummation of the proposed transaction.

Please refer to the notes at the end of the report

Supercomm Conference Highlights

We recently returned from Supercomm, the telecom equipment industry's largest trade show, where we had the opportunity to visit with management and salespeople from a number of equipment vendors including Cisco, Lucent, Juniper, and Nortel.

Key points are as follows:

1. **June quarter sales appear to be in-line for many of our companies.** CSCO, JNPR, PLCM appear stronger than expected.
2. **Wireless strong, Wireline stable.** Demand — wireless strong, optical stable, switching stable, routing strong, broadband access accelerating.
3. **2005 wireline accelerates.** A combination of Voice over Internet Protocol (VoIP) upgrades, IP/MPLS deployments and Triple Play (video, data, and voice) service deployments should drive acceleration and upside to our 2005 capex forecasts.
4. **Carriers are serious about video.** A combination of technology (MPEG4/ADSL2+ and Fiber to the User (FTTU)) and cable competitive pressures are pushing operators towards re-architecting their networks to offer the "triple play" — voice, data and video. Unlike other false starts in offering video, we believe operators are serious this time and have enabling technology. The question is timing.
5. **Optical product announcements exploded vs. prior 2 years.** We notice a correlation between product announcements and Request for Proposals (RFPs) within 12 months. The higher-than-normal optical announcements could presage accelerating RFPs in 2005 with revenue deployments in 2006. Conversations at the show lead us to believe that global lit optical capacity stands at about 50% with areas of under capacity appearing in high traffic routes.

6. **VoIP — RFPs growing globally.** As operators move to packet architectures, the approximate 75,000 circuit switches globally will likely be upgraded to about 20,000 packet switches representing a \$35–40 billion opportunity over the next 10–15 years, in our opinion. We believe the incumbent circuit switch vendors are best positioned. This process began in North America with Verizon choosing Nortel and Qwest and BellSouth picking Lucent initially for hosted VoIP services. Of course, as packet switch sales accelerate, we should see current circuit switch sales at these vendors decline.
7. **IP/MPLS ready for prime time.** Cisco and Juniper were equally upbeat about their business and future opportunities in the core of the network. Juniper salespeople do not appear concerned by the release of Cisco's next generation core router, the CRS-1. The edge routing market is getting crowded, in our view, as a number of vendors were exhibiting B-RAS functionality in many edge IP and ATM switches and routers.

SBC Announces Video Plans

SBC announced network upgrade plans — which could cost \$4–6 billion over 5 years — to offer advanced IP services over its wireline network, including video. We expect the company may spend an incremental \$500 million on wireline capex in 2005, with approximately \$1 billion per year in subsequent years.

Driving Fiber Deeper into the Network. SBC plans to continue to use Fiber-to-the-Premises (FTTP) in new build (greenfield) deployments, where the cost of laying the fiber is less onerous. For the majority of its network, however, SBC will drive fiber to the 'Node' (FTTN). A FTTN deployment would allow SBC to utilize its existing access network (DSL, ADSL2+) to provide high-speed IP services (data, voice, video) at a reduced cost compared to laying fiber all the way to the home.

Wireline Vendors Should Benefit. There are several areas of SBC's network that would require an upgrade in order to offer the IP services that the company envisions. Alcatel has been selected for the fiber portion of the upgrade. We expect ADTN, AFCI and ALA may benefit from the deployment of Remote Terminal DSLAMs, as fiber is deployed further into the network. ALA, LU and NT could win some additional ATM switching contracts as the build progresses, and we expect MOT and SFA may benefit from

set top box deployments, as well. SBC expects to trial a joint service with Microsoft's IPTV platform by year-end.

Update on BT's 21CN Plans

British Telecom's (BT) updated investors on its 21st Century Network (21CN) investment plans on June 9, 2004. At the time of the initial announcement on June 16, 2003, BT announced plans to invest £800 million over the next 3 years in order to achieve targeted cost savings of £1 billion per annum by FY08/09. The original announcement detailed plans to reduce number of nodes in its network, lowering operating costs:

- **Access Reduction** from ~100,000 access devices currently to ~30,000 multi-service access nodes.
- **Service Edge Reduction** from ~1,000 voice switches/cross connects currently to ~100 metro routers.
- **Core Reduction** from ~170 core switching centers currently to ~10 core routers.

At the update, BT announced VoIP (Voice over IP) trials with a view to start commercial migration in 2006. BT also announced plans to trial FTTP (fiber to the premises) deployments for new builds. Details of the trials are given below:

- **VoIP** Calls between Woolwich and Cambridge network nodes in the UK will be carried via an IP core using softswitches rather than PSTN from October 2004. BT plans to have 1,000 customers involved in the trial by January 2005, increasing to 3,000 by June 2005. Large-scale migration of PSTN services to IP core will start in 2006, with the majority completed by 2008.
- **FTTP** BT is trialing FTTP for new home starts from October 2004 through September 2005. The trial will include 3,000 homes with active connections to more than 1,500 residential users and in excess of 100 business users. However, this serves to highlight that European incumbents have generally been slow to commit to spending in this area relative to operators in the US and Japan. Belgacom is the only other European incumbent to have committed to spend in this area. By comparison, SBC recently announced plans to invest \$4–6 billion over the next 5 years on a combination of FTTP and FTTN (fiber to the node). SBC has FTTP plans to pass 500k homes this year and about 1 million

in 2005. Verizon has announced FTTP plans to pass 1 million homes by the end of 2004 and 2 million in 2005.

Announced Vendors

BT will use Marconi's softswitch, combined with its Access Hub product (working as a multiservice access node), for

the initial VoIP trial. ECI Telecom has announced it is the sole supplier for the FTTP trial. However, BT confirmed that it would be talking to around 50 vendors with regard to its future network transformation plans, suggesting that the highly competitive environment for telecom equipment vendors remains firmly in place.

Communications Equipment New Orders

May Communications Equipment Analysis

We are revising our outlook of the North American Communications Equipment order data to *Negative* from Positive, following the May order decline. We view the communications equipment order data as a leading indicator for the Wireline Networking Equipment sector.

New orders decreased 13% in May, down from April's 21% increase, and below the average May decline of 2%. The book-to-bill was 0.99, a drop from April's 1.12.

Exhibit 15

Comm. Equip Industry Data: March – May 2004

	March	April	May
Sequential % Change			
Orders	-8.1%	21.1%	-12.5%
Shipments	0.4%	5.1%	-1.1%
Backlog	-0.3%	1.7%	-0.1%
Inventories	0.4%	1.9%	-0.2%
Ratios			
Book-to-Bill	0.98	1.12	0.99
Inventory/Shipments	1.57	1.52	1.54

Source: Company data, Morgan Stanley Research

May 2004 figures represent preliminary results

Year-over-year comparisons remained strong, as orders, shipments and backlog all demonstrated healthy growth figures.

New Orders

The facts: New orders decreased 12.5% sequentially off a tough compare to \$7.0 billion, following April's upwardly revised 21.1% jump, and below the average May decrease of 1.9%. New orders were up year-over-year at 9%, albeit off a relatively weak compare.

Our take: We are revising our view of the U.S. Communications Equipment industry new order data to

Negative from Positive. May's figures represent a backsliding to below average growth demonstrated in March. Further, May's results are below the historical trend, as the month typically demonstrates an average decrease in new orders of 1.9% in 1993–2003. Going forward, we believe that new order data will continue to exhibit month-to-month fluctuations, but believe a positive bias pervades as economic data in North America continues to paint an improving economic picture.

Shipments and Book-to-Bill Ratio

The facts: Shipments fell 1.1% sequentially to \$7.0 billion. The book-to-bill ratio was 0.99, down from April's 1.12 and returning to a ratio below 1.0.

What Is the Department of Commerce Dataset?

One of the leading, top-down indicators for telecom equipment stocks is the monthly US Department of Commerce survey, in our opinion. We believe the survey represents approximately 60% of all durable and non-durable goods shipments. The survey is skewed toward larger companies for breadth, with a stronger representation in technology than non-technology sectors, in our opinion. As a result, we think the well-established vendors — including Cisco Systems, Lucent Technologies and Nortel Networks, as well as the domestic operations of large foreign vendors like Alcatel — are captured best within the dataset.

Historically, May has turned-in negative results, with an average decrease of 1.9% through the 1993–2003 periods, with sequential new order decreases in five of the eleven years surveyed. The largest increase was in May 1998 (19.3%), and the largest decrease (-18.9%) occurred in May 2000.

Exhibit 16

Communications Equipment Industry Data: 1993 to May 2004

	Year-Over-Year Percentage Change					Book/ Bill Ratio	Inventory / Shipment Ratio
	Equipment Orders	Equipment Shipments	Equipment Backlog	Equipment Inventories	Durable Goods Shipments		
2002							
January	(38.5%)	(30.0%)	(18.7%)	(35.3%)	(30.0%)	1.02x	1.45x
February	(22.8%)	(30.2%)	(17.3%)	(37.7%)	(30.2%)	1.03x	1.42x
March	(30.6%)	(28.3%)	(14.0%)	(13.7%)	(28.3%)	0.91x	1.78x
April	(15.4%)	(18.6%)	(13.5%)	(8.6%)	(18.6%)	1.02x	1.76x
May	(1.5%)	(19.1%)	(11.1%)	(10.8%)	(19.1%)	1.03x	1.77x
June	(3.8%)	(22.4%)	(8.4%)	(11.8%)	(22.4%)	0.91x	1.82x
July	(8.1%)	(18.8%)	(6.8%)	(8.5%)	(18.8%)	1.02x	1.88x
August	(14.3%)	(16.9%)	(6.3%)	(8.1%)	(16.9%)	0.93x	1.82x
September	(14.0%)	(12.4%)	(6.1%)	(6.1%)	(12.4%)	0.58x	1.71x
October	(2.1%)	(13.2%)	(4.6%)	(2.7%)	(13.2%)	1.03x	1.76x
November	(8.9%)	(5.1%)	(5.1%)	(0.1%)	(5.1%)	0.91x	1.68x
December	(20.1%)	(14.1%)	(5.8%)	2.5%	(14.1%)	0.85x	1.71x
2003							
January	6.0%	(4.4%)	(4.2%)	1.2%	(4.4%)	1.13x	1.54x
February	6.3%	(5.4%)	(2.5%)	1.3%	(5.4%)	1.16x	1.52x
March	18.2%	(6.1%)	(3.5%)	(22.9%)	(6.1%)	1.15x	1.46x
April	(1.3%)	(12.6%)	(1.8%)	(25.0%)	(12.6%)	1.15x	1.51x
May	5.2%	(1.1%)	17.3%	12.0%	(1.1%)	1.09x	2.01x
June	25.8%	19.5%	18.0%	12.2%	19.5%	0.96x	1.71x
July	28.7%	20.5%	19.1%	8.8%	20.5%	1.09x	1.70x
August	37.5%	19.5%	21.3%	9.8%	19.5%	1.07x	1.68x
September	156.4%	22.4%	32.0%	20.4%	22.4%	1.22x	1.68x
October	80.2%	31.1%	38.6%	21.0%	31.1%	1.41x	1.63x
November	1.8%	21.0%	36.3%	19.7%	21.0%	0.77x	1.66x
December	(5.1%)	31.1%	32.3%	25.7%	31.1%	0.62x	1.64x
2004							
January	8.5%	26.8%	29.2%	22.5%	26.8%	0.97x	1.49x
February	12.0%	21.9%	27.4%	26.4%	21.9%	1.07x	1.57x
March	2.7%	20.4%	24.5%	30.0%	20.4%	0.98x	1.57x
April	30.2%	33.2%	24.2%	34.8%	33.2%	1.12x	1.52x
May	9.9%	20.7%	3.5%	(7.6%)	20.7%	0.99x	1.54x
Full Year							
1993	16.5%	6.3%	11.5%	10.9%	5.6%	1.04x	1.89x
1994	16.3%	17.3%	14.5%	14.9%	10.1%	1.03x	1.85x
1995	18.3%	10.0%	25.2%	16.8%	7.7%	1.11x	1.97x
1996	3.2%	16.0%	22.1%	4.4%	3.9%	0.99x	1.77x
1997	34.9%	29.8%	0.3%	15.8%	8.7%	1.03x	1.58x
1998	7.2%	4.1%	18.9%	15.3%	3.8%	1.06x	1.75x
1999	17.0%	11.3%	14.9%	(0.1%)	4.4%	1.11x	1.57x
2000	13.4%	18.9%	37.5%	1.6%	4.5%	1.06x	1.34x
2001	(37.2%)	(26.2%)	(3.6%)	(13.1%)	(8.1%)	0.90x	1.58x
2002	(16.9%)	(20.0%)	(10.1%)	(13.1%)	(6.4%)	0.94x	1.71x
2003	25.0%	10.5%	16.6%	6.4%	1.9%	1.06x	1.65x
	Month-Over-Month Percentage Change					Three Month Moving Avg Ratio	
	Equipment Orders	Equipment Shipments	Equipment Backlog	Equipment Inventories	Durable Goods Shipments	Book/ Bill	Inventory/ Shipment
2002							
January	8.7%	(2.5%)	0.3%	(0.9%)	(1.6%)	0.96x	1.49x
February	0.6%	(0.7%)	0.5%	(3.2%)	(3.0%)	0.99x	1.43x
March	(9.8%)	2.3%	3.0%	28.3%	(1.1%)	0.99x	1.55x
April	14.4%	2.2%	0.3%	1.1%	3.6%	0.99x	1.65x
May	(2.7%)	(3.5%)	0.4%	(2.6%)	(0.3%)	0.99x	1.77x
June	(15.6%)	(4.9%)	(1.2%)	(2.5%)	(1.5%)	0.99x	1.78x
July	9.2%	(2.3%)	0.2%	1.3%	3.2%	0.99x	1.82x
August	(8.5%)	0.3%	(0.9%)	(2.8%)	(1.8%)	0.95x	1.84x
September	(38.2%)	(1.8%)	(5.4%)	(8.0%)	(0.9%)	0.84x	1.81x
October	69.1%	(3.7%)	0.4%	(0.9%)	1.3%	0.85x	1.76x
November	(5.1%)	6.7%	(1.2%)	1.9%	(1.7%)	0.84x	1.72x
December	(12.9%)	(6.5%)	(2.0%)	(5.1%)	(2.1%)	0.93x	1.72x
2003							
January	44.2%	8.4%	1.9%	(2.2%)	2.5%	0.96x	1.64x
February	0.8%	(1.6%)	2.3%	(3.2%)	(1.9%)	1.05x	1.59x
March	0.3%	1.5%	2.0%	(2.4%)	0.4%	1.15x	1.50x
April	(4.5%)	(5.0%)	2.0%	(1.7%)	(1.1%)	1.15x	1.49x
May	3.6%	9.2%	19.9%	45.5%	2.5%	1.13x	1.66x
June	0.9%	14.9%	(0.6%)	(2.3%)	1.7%	1.07x	1.74x
July	11.8%	(1.4%)	1.2%	(1.7%)	2.8%	1.05x	1.80x
August	(2.2%)	(0.5%)	0.9%	(1.9%)	(2.5%)	1.04x	1.69x
September	15.2%	0.5%	2.9%	0.8%	2.9%	1.13x	1.69x
October	18.8%	3.1%	5.4%	(0.4%)	0.7%	1.23x	1.66x
November	(46.4%)	(1.5%)	(2.8%)	0.8%	0.2%	1.13x	1.66x
December	(18.8%)	1.3%	(4.9%)	(0.3%)	2.1%	0.93x	1.64x
2004							
January	64.8%	4.9%	(0.5%)	(4.7%)	(1.0%)	0.78x	1.60x
February	4.1%	(5.5%)	0.9%	(0.1%)	0.88x	1.56x	1.56x
March	(8.1%)	0.4%	(0.3%)	0.4%	4.4%	1.00x	1.54x
April	21.1%	5.1%	1.7%	1.9%	(0.8%)	1.06x	1.56x
May	(12.5%)	(1.1%)	(0.1%)	(0.2%)	(0.7%)	1.03x	1.54x

Source: Company data, Morgan Stanley Research. May 2004 figures represent preliminary results.

Wireline Networking Equipment – June 29, 2004

Please see analyst certification and other important disclosures starting on page 25.

Exhibit 17

Valuation Metrics

	6/29/04		Enterprise Value(\$mil)	P/E			2004 P/E Rel to S&P 500	Long Term EPS Growth Rate	P/E/G C2005E	EV/Sales			Price/ Total BV	Price/ Tangible BV	Price/ Total Cash	Price/ Net Cash	
	Stock Price (\$)	Market Cap (\$M)		C2003A	C2004E	C2005E				C2003A	C2004E	C2005E					
Diversified Equipment																	
Alcatel	\$15.22	20,377	19,187	NM	28.9x	20.9x	1.6x	-14%	NA	1.3x	1.2x	1.2x	5.5x	-15.3x	2.7x	17.1x	
Cisco Systems	\$23.30	164,824	155,963	36.3x	29.6x	27.0x	1.6x	14%	1.9	8.0x	6.7x	5.9x	6.3x	7.7x	18.6x	18.6x	
Ericsson	\$29.43	46,441	41,588	NM	230.6x	219.6x	12.5x	2%	99.8	2.7x	2.5x	2.5x	5.5x	6.7x	4.7x	9.6x	
Lucent	\$3.75	16,298	17,982	NM	38.2x	31.2x	2.1x	21%	1.5	2.1x	2.0x	1.9x	-4.6x	-4.4x	3.6x	-9.7x	
Motorola	\$17.97	44,698	43,796	72.7x	26.6x	25.6x	1.4x	15%	1.7	1.6x	1.3x	1.2x	3.4x	3.9x	5.3x	NMF	
Nokia	\$14.14	66,193	53,077	15.4x	16.8x	15.5x	0.9x	-1%	NA	1.5x	1.5x	1.5x	3.9x	4.2x	4.8x	5.0x	
Nortel Networks	\$4.74	20,647	20,520	28.2x	33.1x	22.9x	1.8x	44%	0.5	2.1x	2.0x	1.9x	5.5x	13.5x	5.2x	162.6x	
Average					38.1x	57.7x	51.8x	3.1x	12%	21.1	2.7x	2.5x	2.3x	3.6x	2.3x	6.4x	33.9x
Core Equipment																	
CIENA	\$3.59	1,706	1,005	NM	NM	NM	NM	20%	NA	3.6x	2.7x	2.1x	1.4x	2.3x	1.2x	2.4x	
Juniper	\$23.57	9,943	9,420	160.9x	72.9x	51.7x	4.0x	18%	2.9	13.4x	7.8x	5.7x	6.1x	15.2x	9.2x	19.0x	
Sycamore Networks	\$4.19	1,142	177	NM	NM	NM	NM	12%	NA	4.6x	3.3x	2.6x	1.2x	1.2x	1.2x	1.2x	
Average				NM	NM	NM	NM	17%	NM	7.2x	4.6x	3.4x	2.9x	6.2x	3.8x	7.5x	
Access and Enterprise Equipment																	
3Com	\$6.12	2,432	1,049	NM	NM	98.6x	NM	10%	9.9	1.5x	1.4x	1.1x	1.6x	1.6x	1.8x	1.8x	
ADC Telecommunications	\$2.71	2,205	1,847	NM	59.6x	24.4x	3.2x	15%	1.6	2.3x	2.0x	1.6x	3.6x	3.7x	2.9x	6.2x	
ADTRAN	\$32.01	2,650	2,296	41.9x	31.2x	29.6x	1.7x	11%	2.6	5.8x	4.7x	4.3x	5.1x	5.1x	6.6x	7.5x	
Advanced Fibre	\$19.63	1,770	1,192	50.6x	45.5x	37.3x	2.5x	17%	2.2	3.6x	2.3x	2.1x	1.8x	2.4x	3.1x	3.1x	
Avaya	\$15.94	7,540	6,753	125.7x	32.7x	18.2x	1.8x	13%	1.4	1.7x	1.6x	1.6x	11.1x	16.9x	5.0x	9.6x	
Polycom	\$21.51	2,208	1,686	53.3x	32.7x	27.4x	1.8x	18%	1.5	4.0x	3.2x	2.8x	2.3x	4.0x	4.2x	4.2x	
Scientific Atlanta	\$32.69	5,067	3,881	33.8x	26.4x	27.9x	1.4x	21%	1.3	2.5x	2.4x	2.5x	3.0x	3.5x	4.2x	4.3x	
Tekelec	\$16.27	1,061	848	43.2x	36.4x	26.5x	2.0x	20%	1.3	3.2x	2.3x	2.0x	3.1x	4.3x	3.1x	5.0x	
Tellabs	\$8.43	3,500	2,320	NM	31.7x	23.8x	1.7x	13%	1.8	2.4x	2.1x	1.9x	1.6x	2.2x	3.0x	3.0x	
Average				58.1x	37.0x	34.9x	2.0x	15%	2.6	3.0x	2.4x	2.2x	3.7x	4.9x	3.8x	4.9x	

E = Morgan Stanley Research Estimates

Source: Company data, Morgan Stanley Research

Exhibit 18

Earnings and Sales Metrics

	EPS					Revenue					Gross Margin			Operating Margin		
	C2003A	C2004E	C2005E	MRQ	Next QE	C2003A	C2004E	C2005E	MRQ	Next QE	C2003A	MRQ	Next QE	C2003A	MRQ	Next QE
Diversified Equipment																
Alcatel	-\$0.25	\$0.53	\$0.73	\$0.16	\$0.01	15,254	15,970	16,422	4,590	3,340	33%	33%	37%	NM	NM	NM
Cisco Systems	\$0.64	\$0.79	\$0.86	\$0.19	\$0.19	19,591	23,435	26,331	5,620	5,858	70%	69%	68%	25%	31%	30%
Ericsson	\$0.00	\$0.13	\$0.13	\$0.03	\$0.03	15,691	16,326	16,417	3,746	4,069	32%	45%	46%	-9%	16%	18%
Lucent	-\$0.13	\$0.10	\$0.12	\$0.03	\$0.02	8,654	9,002	9,659	2,194	2,217	36%	43%	40%	-25%	9%	8%
Motorola	\$0.25	\$0.68	\$0.70	\$0.18	\$0.17	27,058	34,418	35,628	8,561	8,500	33%	34%	34%	3%	9%	8%
Nokia	\$0.92	\$0.84	\$0.91	\$0.21	\$0.17	35,908	34,567	34,719	8,076	8,223	41%	40%	39%	16%	17%	13%
Nortel Networks	\$0.17	\$0.14	\$0.21	\$0.10	\$0.03	9,807	10,213	10,715	2,826	2,378	46%	48%	45%	-10%	12%	8%
Total	\$1.59	\$3.20	\$3.67			131,962	143,931	149,892								
YoY Growth	NA	101%	15%			-8%	9%	4%								
Core Equipment																
CIENA	-\$0.37	-\$0.27	-\$0.12	-\$0.09	-\$0.07	280	366	490	75	93	26%	11%	29%	-128%	-93%	-53%
Juniper	\$0.15	\$0.32	\$0.46	\$0.09	\$0.04	701	1,215	1,661	224	276	63%	67%	65%	-1%	23%	12%
Sycamore Networks	-\$0.17	-\$0.17	-\$0.17	-\$0.03	-\$0.04	38	53	69	15	13	25%	34%	34%	-114%	-87%	-118%
Total	-\$0.40	-\$0.11	\$0.17			1,020	1,634	2,219								
YoY Growth	NA	NA	NA			15%	60%	36%								
Access and Enterprise Equipment																
3Com	-\$0.47	-\$0.25	\$0.06	-\$0.01	-\$0.06	720	762	933	183	186	35%	41%	40%	0%	-5%	-11%
ADC Telecommunications	-\$0.01	\$0.05	\$0.11	\$0.00	\$0.01	790	920	1,127	182	255	38%	40%	39%	-17%	-2%	2%
ADTRAN	\$0.76	\$1.03	\$1.08	\$0.25	\$0.26	397	490	538	114	120	56%	57%	57%	11%	25%	25%
Advanced Fibre	\$0.39	\$0.43	\$0.53	\$0.09	\$0.08	333	516	575	93	132	49%	51%	41%	9%	10%	6%
Avaya	\$0.13	\$0.49	\$0.88	\$0.08	\$0.11	3,948	4,113	4,340	1,006	1,021	42%	47%	47%	-1%	6%	7%
Polycom	\$0.40	\$0.66	\$0.78	\$0.13	\$0.16	420	529	598	119	128	61%	63%	63%	14%	14%	15%
Scientific Atlanta	\$0.97	\$1.24	\$1.17	\$0.34	\$0.32	1,566	1,637	1,543	437	433	36%	37%	37%	9%	16%	16%
Tekelec	\$0.38	\$0.45	\$0.61	\$0.12	\$0.07	264	364	428	79	88	77%	75%	73%	17%	8%	4%
Tellabs	-\$0.19	\$0.27	\$0.35	\$0.05	\$0.06	980	1,125	1,206	264	278	46%	54%	52%	-4%	7%	8%
Total	\$2.36	\$4.35	\$5.58			9,419	10,455	11,289								
YoY Growth	19%	85%	28%			-15%	11%	8%								

E = Morgan Stanley Research Estimates

Source: Company data, Morgan Stanley Research

Exhibit 19

Balance Sheet Metrics

	6/29/2004 Stock Price	Market Cap (\$M)	Total Cash	Total Debt	Enterprise Value (\$M)	Debt/ Cap	Total Cash/Share	Net Cash/Share	Tangible BV/Share	Total BV/Share	Change over Last 6 Months			
											Total Cash/Share	Net Cash/Share	Tangible BV/Share	Total BV/Share
Diversified Equipment														
Alcatel	\$15.22	20,377	7,642	6,453	19,187	64%	\$5.71	\$0.89	(\$1.00)	\$2.76	(\$0.67)	\$0.46	(\$0.44)	(\$0.84)
Cisco Systems	\$23.30	164,824	8,861	0	155,963	0%	\$1.25	\$1.25	\$3.02	\$3.67	(\$0.02)	(\$0.02)	(\$0.21)	(\$0.20)
Ericsson	\$29.43	46,441	9,916	5,064	41,588	37%	\$6.28	\$3.07	\$4.40	\$5.35	\$0.41	\$0.62	\$0.22	\$0.21
Lucent	\$3.75	16,298	4,589	6,273	17,982	228%	\$1.06	(\$0.39)	(\$0.85)	(\$0.81)	\$0.02	(\$0.05)	\$0.17	\$0.17
Motorola	\$17.97	44,698	8,415	7,513	43,796	36%	\$3.38	\$0.36	\$4.64	\$5.28	\$0.50	\$0.84	\$0.54	\$0.47
Nokia	\$14.14	66,193	13,894	778	53,077	4%	\$2.97	\$2.80	\$3.40	\$3.62	\$0.16	\$0.13	(\$0.08)	(\$0.19)
Nortel Networks	\$4.74	20,647	3,994	3,867	20,520	51%	\$0.92	\$0.03	\$0.35	\$0.87	(\$0.04)	(\$0.04)	\$0.43	\$0.15
Core Equipment														
CIENA	\$3.59	1,706	1,459	758	1,005	39%	\$3.07	\$1.48	\$1.59	\$2.51	(\$0.35)	(\$0.36)	(\$0.27)	(\$0.29)
Juniper	\$23.57	9,943	1,082	558	9,420	25%	\$2.56	\$1.24	\$1.55	\$3.88	(\$0.57)	\$0.34	\$0.27	\$0.27
Sycamore Networks	\$4.19	1,142	966	0	177	0%	\$3.54	\$3.54	\$3.53	\$3.53	(\$0.08)	(\$0.08)	(\$0.07)	(\$0.07)
Access and Enterprise Equipment														
3Com	\$6.12	2,432	1,383	0	1,049	0%	\$3.48	\$3.48	\$3.76	\$3.77	(\$0.02)	(\$0.02)	(\$0.31)	(\$0.32)
ADC Telecommunications	\$2.71	2,205	758	400	1,847	40%	\$0.93	\$0.44	\$0.74	\$0.75	(\$0.01)	\$0.00	(\$0.02)	(\$0.02)
ADTRAN	\$32.01	2,650	404	50	2,296	9%	\$4.88	\$4.27	\$6.22	\$6.22	\$0.88	\$0.88	\$0.88	\$0.88
Advanced Fibre	\$19.63	1,770	577	0	1,192	0%	\$6.40	\$6.40	\$8.06	\$11.08	(\$2.28)	(\$2.28)	(\$2.07)	\$0.28
Avaya	\$15.94	7,540	1,516	729	6,753	52%	\$3.21	\$1.66	\$0.95	\$1.44	\$0.68	\$1.16	\$0.83	\$1.02
Polycom	\$21.51	2,208	522	0	1,686	0%	\$5.08	\$5.08	\$5.38	\$9.29	(\$0.44)	(\$0.44)	(\$0.43)	\$0.40
Scientific Atlanta	\$32.69	5,067	1,195	9	3,881	1%	\$7.71	\$7.65	\$9.25	\$11.07	\$1.09	\$1.10	\$0.89	\$0.88
Tekelec	\$16.27	1,061	342	129	848	27%	\$5.25	\$3.27	\$3.74	\$5.27	\$0.04	(\$0.02)	\$0.53	\$0.39
Tellabs	\$8.43	3,500	1,180	0	2,320	0%	\$2.84	\$2.84	\$3.78	\$5.36	\$0.28	\$0.28	\$0.14	\$0.13

Source: Company data, Morgan Stanley Research

Companies Highlighted in This Report

		6/29/2004		
<u>Overweight</u>	<u>Ticker</u>	<u>Price</u>	<u>Rating</u>	<u>Price Target</u>
3Com	COMS	\$6.10	O-V	\$11
Andrew	ANDW	\$19.93	O-V	\$23
Avaya	AV	\$15.94	O-V	\$24
Corning	GLW	\$12.49	O-V	\$14
Nortel	NT	\$4.74	O-V	\$8
Polycom	PLCM	\$21.46	O-V	\$26
Powerwave	PWAV	\$7.39	O-V	\$13
Tekelec	TKLC	\$16.22	O-V	\$23
<u>Underweight</u>				
CIENA	CIEN	\$3.58	U-V	NA
Nokia	NOK	\$14.14	U-V	\$10
Sycamore	SCMR	\$4.19	U-V	NA
Tektronix	TEK	\$33.80	U-V	NA
Tellabs	TLAB	\$8.43	U-V	NA

Source: Morgan Stanley Research

Analyst Certification

The following analysts hereby certify that their views about the companies and their securities discussed in this report are accurately expressed and that they have not received and will not receive direct or indirect compensation in exchange for expressing specific recommendations or views in this report: Alkesh Shah, Angela Dean.

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Global Stock Ratings Distribution

(as of May 31, 2004)

Stock Rating Category	Coverage Universe		Investment Banking Clients (IBC)		
	Count	% of Total	Count	% of Total IBC	% of Rating Category
Overweight/Buy	631	36%	266	41%	42%
Equal-weight/Hold	787	44%	282	43%	36%
Underweight/Sell	353	20%	102	16%	28%
Total	1,771		650		

Data include common stock and ADRs currently assigned ratings. For disclosure purposes (in accordance with NASD and NYSE requirements), we note that Overweight, our most positive stock rating, most closely corresponds to a buy recommendation; Equal-weight and Underweight most closely correspond to neutral and sell recommendations, respectively. However, Overweight, Equal-weight, and Underweight are not the equivalent of buy, neutral, and sell but represent recommended relative weightings (see definitions below). An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations. Investment Banking Clients are companies from whom Morgan Stanley or an affiliate received investment banking compensation in the last 12 months.

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Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, or the relevant country MSCI index, on a risk-adjusted basis over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, or the relevant country MSCI index, on a risk-adjusted basis over the next 12-18 months.

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Unless otherwise specified, the time frame for price targets included in this report is 12 to 18 months. Ratings prior to March 18, 2002: SB=Strong Buy; OP=Outperform; N=Neutral; UP=Underperform. For definitions, please go to www.morganstanley.com/companycharts.

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Attractive (A). The analyst expects the performance of his or her industry coverage universe to be attractive vs. the relevant broad market benchmark over the next 12-18 months.

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