

RESEARCH REPORT

TEBS: Technology Enabled Business Services

- Software
- Information Services
- Business Process Services
- Infrastructure Services

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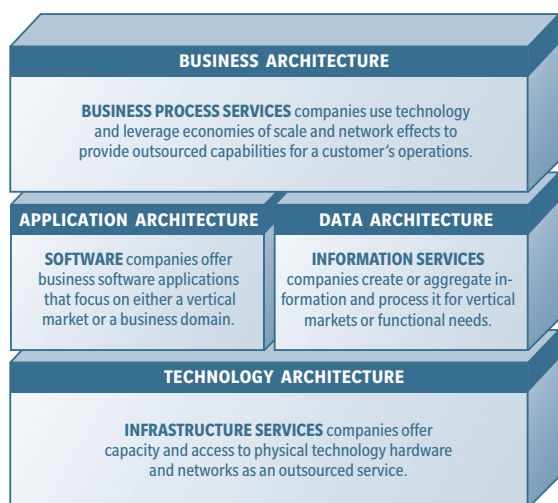
- Description of the Technology Enabled Business Services Segments
- Business Model Advantages and Key Trends
- Valuation Metrics and Public Company Performance
- Mergers and Acquisitions

EXECUTIVE SUMMARY

Cherry Tree has advised entrepreneurs, CEOs, strategic and financial investors, and leaders of Technology Enabled Business Services (TEBS) companies for more than 30 years. TEBS companies are defined as those that:

- Offer a solution, product or service that is delivered or enhanced via technology
- Generate revenue primarily from other businesses (B2B)
- Use their own intellectual property to differentiate their solution

We track trends and activity in the space, including M&A transactions and the valuations and performance of an index of 100 publicly-traded Technology Enabled Business Services companies (the TEBS 100). The four main segments of the TEBS 100 align with the open architecture framework, as shown below.



Source: Cherry Tree Research, The Open Group

As companies seek to automate more of their business processes with technology solutions, Technology Enabled Business Services companies will continue to see strong demand for their offerings. There will also likely be strong demand from potential acquirers, as companies like those in the TEBS 100 supplement their own organic growth initiatives with acquisitions. Many strategic acquirers have solid balance sheets and are looking to acquire new solutions, new customers and new talent. Meanwhile, Private Equity firms are becoming more active as buyers in the space. TEBS companies with differentiated solutions and strong financials will likely garner significant interest and attractive valuations.

BUSINESS MODEL ADVANTAGES

Technology Enabled Business Services companies are consistently valued at a premium to the overall market due to fundamental advantages of the companies' solutions and their typical business models.

Recurring Revenue—The vast majority of TEBS companies operate under recurring revenue business models, often as Software as a Service (SaaS) subscriptions or managed service contracts. The recurring revenue streams generally result in less volatility of business results and can offer favorable cash flow dynamics.

TEBS 100 Segments: Median 1-Year Revenue Growth

Software	16.3%
Information Services	10.3%
Business Process Services	5.7%
Infrastructure Services	18.4%
S&P 500	6.6%

Source: Cherry Tree Research, Capital IQ: 12/31/2017

Operating Leverage—Typically, TEBS companies require limited variable expenditures for labor and external costs, generating high gross margin. Investments in fixed expenses allow capacity for growth with limited incremental investment, generating accelerating profit potential as revenue increases.

TEBS 100 Segments: Median Gross Margin

Software	66.5%
Information Services	63.1%
Business Process Services	39.1%
Infrastructure Services	58.1%
S&P 500	43.0%

Source: Cherry Tree Research, Capital IQ: 12/31/2017

Business to Business—Most solutions in the space are critical for business customers and switching costs are typically high, limiting short-term sensitivity to changing economic conditions. New customer acquisition may be slow and expensive, but new relationships represent a small share of revenue in any given period if there is a substantial customer base. Also, a high gross margin reduces the likelihood of fundamental business failure as compared to more volatile, lower margin business sectors.

Because of the predictable business models and profitability potential of TEBS companies, they consistently receive premium valuation multiples.

TEBS 100 Segments: Median Valuation Multiples

	EV/Revenue	EV/EBITDA
Software	6.1x	23.3x
Information Services	5.5x	17.8x
Business Process Services	2.2x	15.3x
Infrastructure Services	4.2x	17.1x
S&P 500	3.0x	13.5x

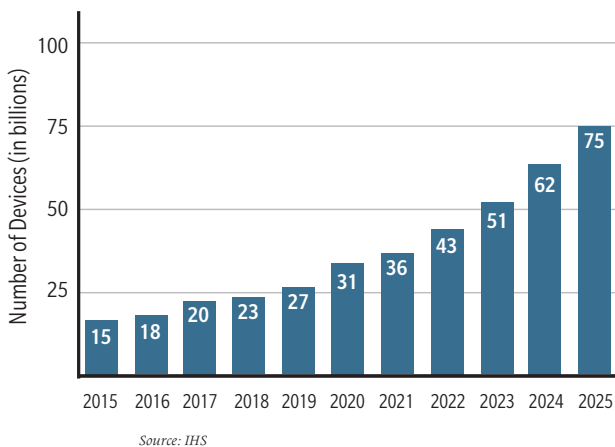
Source: Cherry Tree Research, Capital IQ: 12/31/2017

KEY TRENDS

A number of key trends are affecting TEBS businesses. Companies that are able to leverage these trends are more likely to add value to their customers, and to be rewarded with higher valuations by potential acquirers or investors.

Internet of Things (IoT)—Decentralized computing power and nearly ubiquitous connectivity have allowed for the emergence of the Internet of Things, as nearly any object can now be connected to the internet to provide data and insight that was previously too expensive or too time-consuming to obtain. The installed base of connected “things” is growing quickly and is expected to accelerate in the next few years.

IoT Installed Base



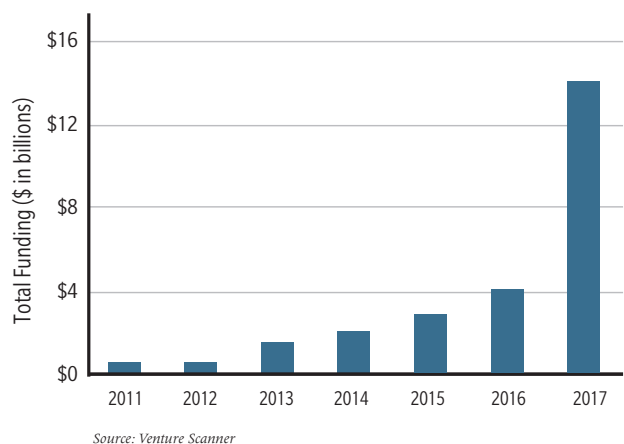
TEBS companies need to be thoughtful about the way IoT can disrupt the value chain in their industry, and how they can best position their business to take advantage of the data created by IoT.

Blockchain – Most often associated with cryptocurrency and FinTech, blockchain has the potential to disrupt all industries as a way to securely, automatically, and permanently record transactions between parties. Blockchain has not only created new industries, but can theoretically be applied to nearly any industry when loosely defined as a public ledger of transactions that is not reliant on third-party oversight. TEBS companies should consider how blockchain technologies can be applied to their industries and solutions to serve as a competitive advantage and as a source of operational efficiency.

“If you had understood in 1995 the opportunities and threats it (the internet) would ultimately present to your company or industry, what would you have done differently—to become the disrupter rather than the disrupted? That is where we are with blockchain today.” –Ginni Rometty, IBM CEO

Artificial Intelligence – Artificial Intelligence (AI) allows machines to work and react like humans with learning, planning, problem solving, and speech recognition. Essentially, AI aims to create intelligent machines that have the capability to learn. Investment in AI has exploded in recent years, particularly venture capital funding.

Venture Capital Investment in Artificial Intelligence



While ambition and investment is significant, only one in five companies have actually incorporated AI into their offerings or business processes. TEBS companies need to consider how AI will affect their markets and how they can leverage AI technologies in their solutions and in their operations.

SEGMENT ANALYSIS

Segment #1: Software

Software providers are typically focused on a vertical market or a specific business process used in many vertical markets. Providers leverage their expertise in that market or process to create configurable applications to guide workflows and automate the manual processing of information, either internally generated or externally provided.

TEBS 100: Software Segment – Key Metrics

	Revenue Growth	Gross Margin	EBITDA Margin	EV/Revenue	EV/EBITDA
25th Percentile	6.9%	56.4%	(3.1%)	4.1x	16.8x
Median	16.3%	66.5%	10.9%	6.1x	23.3x
75th Percentile	25.4%	76.5%	21.8%	7.7x	33.1x

Source: Cherry Tree Research, Capital IQ: 12/31/2017

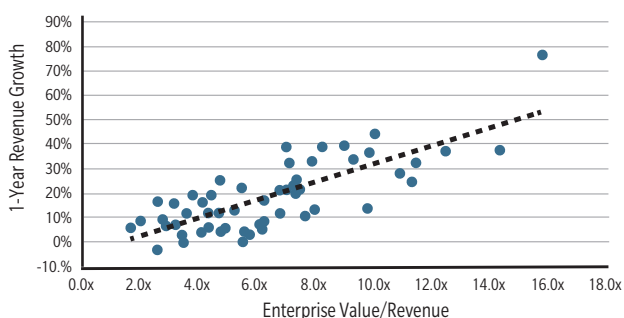
COMPANY SPOTLIGHT – MINDBODY

MINDBODY provides a management software solution and payments platform for over 35 million customers and 58,000 health and wellness businesses around the world. The software allows businesses to streamline their operations with client scheduling, staff management, CRM, payment processing and reporting solutions. MINDBODY has maintained revenue growth greater than 30% each of the last five years and was valued at 7.1x revenue as of 12/31/2017.

Software has never been easier or cheaper to create, so providers need to be aware of potential threats from non-traditional players in their markets that could disrupt the value chain and create software solutions.

For publicly-traded Software companies, the key driver of value is the revenue growth rate. Since most Software companies have a high gross margin and high profit potential, the companies that are growing the fastest are usually those valued the highest.

Software Segment Valuation Comparison



Source: Cherry Tree Research, Capital IQ: 12/31/2017

Segment #2: Information Services

Information Services companies create information themselves or aggregate it from other sources and process it for vertical markets or functional needs. Technology-enabled delivery of the information allows for high margins and profit potential as the fixed expense of creating the information is spread over many customers.

TEBS 100: Information Services Segment – Key Metrics

	Revenue Growth	Gross Margin	EBITDA Margin	EV/Revenue	EV/EBITDA
25th Percentile	3.0%	58.9%	23.6%	3.9x	14.9x
Median	10.3%	63.1%	27.3%	5.5x	17.8x
75th Percentile	12.8%	68.2%	35.3%	7.2x	19.1x

Source: Cherry Tree Research, Capital IQ: 12/31/2017

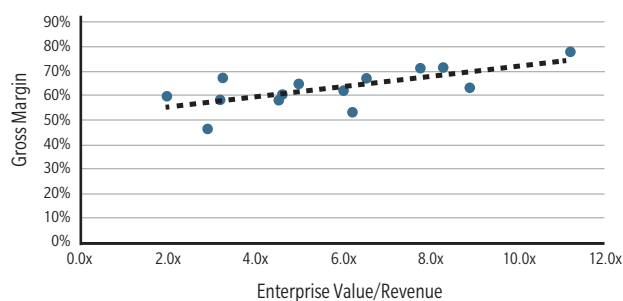
COMPANY SPOTLIGHT – COSTAR GROUP

CoStar Group provides an online platform of information, analytics and marketing services to the commercial real estate industry. The company's suite of offerings includes information about available real estate, comparable spaces, tenant information, marketing services and other analytical capabilities. The company maintains a gross margin greater than 75% and EBITDA Margins greater than 25%.

Information Services is the TEBS segment most affected by the Key Trends identified in this report. IoT is creating vast amounts of new information and blockchain decentralizes the oversight and verification of information; meanwhile, AI can bring analysis and processing to the masses.

For publicly-traded Information Services companies, the key driver of value is gross margin. Companies that are able to efficiently consolidate the information that they resell, and spread the costs of that consolidation across many buyers, are usually valued the highest.

Information Services Segment Valuation Comparison



Source: Cherry Tree Research, Capital IQ: 12/31/2017

Segment #3: Business Process Services

Business Process Services companies provide outsourced capabilities for customers' business functions, and move beyond basic Business Process Outsourcing by using technology to automate and deliver their solutions.

TEBS 100: Business Process Services Segment – Key Metrics

	Revenue Growth	Gross Margin	EBITDA Margin	EV/Revenue	EV/EBITDA
25th Percentile	1.4%	26.4%	10.0%	1.7x	11.7x
Median	5.7%	39.1%	17.6%	2.2x	15.3x
75th Percentile	12.6%	50.1%	20.7%	4.0x	17.7x

Source: Cherry Tree Research, Capital IQ: 12/31/2017

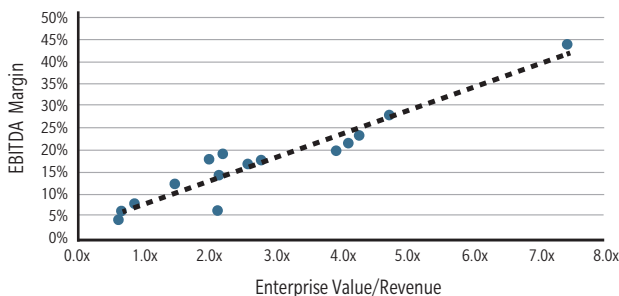
COMPANY SPOTLIGHT – CONDUENT

Conduent is a provider of transaction-intensive processing, analytics and automation for government and commercial customers in more than 40 countries. Services include health-care patient interaction, serving as the customer interface for large segments of the technology industry, and administration and processing for public transportation systems. Conduent has been able to scale its business to yield EBITDA that is more than 50% of the company's gross profit.

The development of proprietary intellectual property, or investment in hardware and software, allows these companies to generate higher margins than traditional services companies. Given the nature of the business functions they provide, these companies will likely never be fully replaced by software, although they do need to invest in technology to continue offering a strong value proposition.

For publicly-traded Business Process Services companies, the key driver of value is EBITDA Margin. The companies that are able to yield high rates of EBITDA from their gross profit (since gross margin is typically lower than other TEBS segments) usually receive the highest valuations.

Business Process Services Segment Valuation Comparison



Source: Cherry Tree Research, Capital IQ: 12/31/2017

Segment #4: Infrastructure Services

Infrastructure Services companies offer capacity and access to physical technology hardware and networks as an outsourced service of critical functions. These companies leverage economies of scale and network effects to provide the technology infrastructure that allows businesses to operate in the modern economy.

TEBS 100: Infrastructure Services Segment – Key Metrics

	Revenue Growth	Gross Margin	EBITDA Margin	EV/Revenue	EV/EBITDA
25th Percentile	9.0%	51.1%	8.1%	2.7x	12.5x
Median	18.4%	58.1%	23.5%	4.2x	17.1x
75th Percentile	25.7%	65.5%	27.0%	5.1x	20.5x

Source: Cherry Tree Research, Capital IQ: 12/31/2017

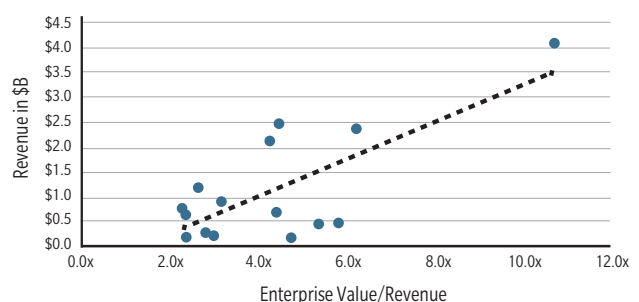
COMPANY SPOTLIGHT – GODADDY

GoDaddy designs and develops cloud-based technology products for small businesses, web design professionals and individuals. The company's solutions include domain name registration, hosting products, a website builder and marketing solutions that helps customers get their websites found. GoDaddy has achieved revenue growth of more than 15% each of the last five years.

Infrastructure Services companies could run the risk of being commoditized if they simply resell access or capacity to the investments they have made in their technology assets. The companies that will likely be valued the highest over the long-term are those that augment the infrastructure they provide with value-added services and support, productize their offerings, and leverage technology to continually improve efficiency.

For publicly-traded Infrastructure Services companies, the key driver of value is usually size (measured in revenue). Greater scale allows for both higher margins and higher valuations.

Infrastructure Services Segment Valuation Comparison

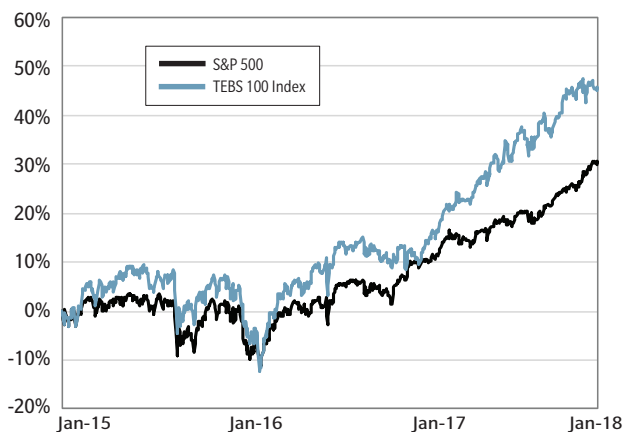


Source: Cherry Tree Research, Capital IQ: 12/31/2017

PUBLIC COMPANY PERFORMANCE

Cherry Tree tracks the performance of 100 publicly-traded Technology Enabled Business Services companies (the TEBS 100). As seen below, these companies have outperformed the broader market over the last three years (particularly in 2017), in large part due to the business model advantages that the companies enjoy.

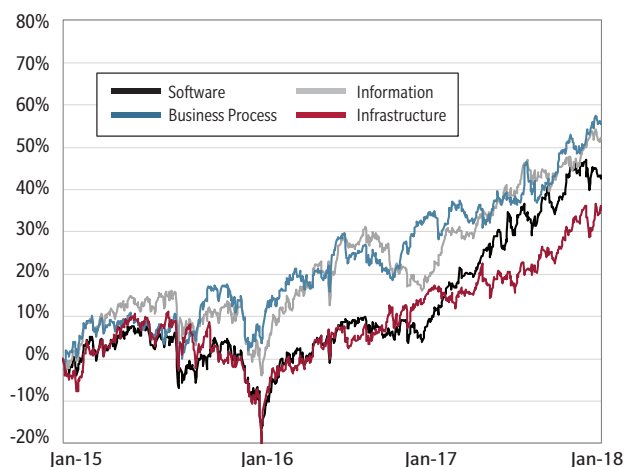
TEBS 100 Index vs. S&P 500



Source: Cherry Tree Research, Capital IQ: 12/31/2017

The four segments of the TEBS 100 Index have performed directionally with each other over the last three years. While Information Services and Business Process Services have outperformed Software and Infrastructure Services, all four segments have outperformed the S&P 500.

TEBS 100 Segments



Source: Cherry Tree Research, Capital IQ: 12/31/2017

Initial Public Offerings

Due to the volatility and relative immaturity of companies that have recently gone public, the TEBS 100 index does not include companies that have had an IPO within the past year. However, there are a number of companies that went public or filed for an IPO in 2017 that will be excellent candidates to join the index in the future.

Recent IPOs

Date	Company	IPO Size (\$M)	Revenue (\$M)	EBITDA (\$M)
03/17/2017	MuleSoft, Inc.	\$221	\$188	(\$46)
03/24/2017	Alteryx, Inc.	\$126	\$86	(\$21)
04/07/2017	Okta, Inc.	\$187	\$160	(\$80)
04/13/2017	Yext, Inc.	\$116	\$124	(\$39)
04/28/2017	Cloudera, Inc.	\$225	\$261	(\$156)
05/12/2017	Veritone, Inc.	\$38	\$10	(\$26)
05/24/2017	SMART Global Holdings	\$58	\$627	\$56
05/25/2017	WideOpenWest, Inc.	\$310	\$1,235	\$449
05/25/2017	Appian Corporation	\$75	\$135	(\$15)
06/22/2017	Altice USA, Inc.	\$1,918	\$7,707	\$3,081
06/30/2017	Tintri, Inc.	\$60	\$133	(\$92)
07/28/2017	Redfin Corporation	\$138	\$313	(\$15)
10/06/2017	Switch, Inc.	\$531	\$361	\$169
10/19/2017	MongoDB, Inc.	\$192	\$124	(\$84)
10/27/2017	ForeScout Technologies	\$116	\$204	(\$63)
11/01/2017	Altair Engineering Inc.	\$156	\$326	(\$14)
11/03/2017	Aquantia Corp.	\$61	\$98	\$4
11/10/2017	Bandwidth Inc.	\$80	\$159	\$20
11/15/2017	SendGrid, Inc.	\$131	\$103	\$6
11/17/2017	SailPoint Technologies	\$240	\$163	\$18
12/15/2017	Casa Systems, Inc.	\$78	\$333	\$140

Source: Cherry Tree Research, Capital IQ: 12/31/2017

Recent IPO Filings

Company	Revenue	Notes
Cardlytics	\$128M	
ConvergeOne	unknown	Reverse merger
Dropbox	unknown	Filed confidentially (source: Bloomberg)
One Stop Systems	\$27M	

Source: Cherry Tree Research, Capital IQ: 12/31/2017

Valuations

Because of the predictable business models and profitability potential of TEBS companies, they consistently receive premium valuation multiples.

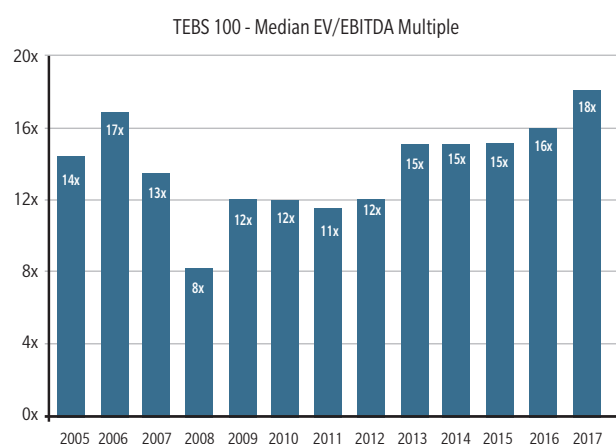
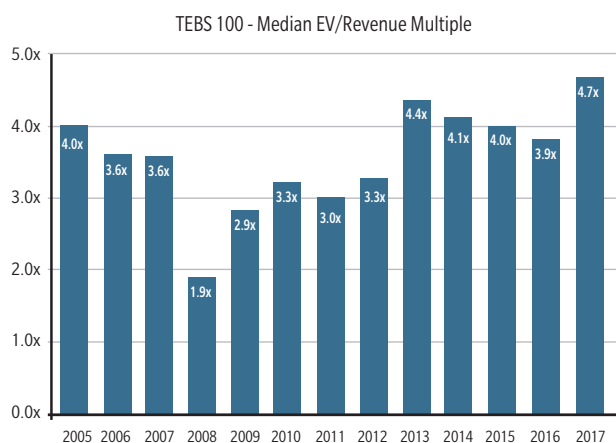
TEBS 100 Segments: Median Valuation Multiples

	EV/Revenue	EV/EBITDA
Software	6.1x	23.3x
Information Services	5.5x	17.8x
Business Process Services	2.2x	15.3x
Infrastructure Services	4.2x	17.1x
S&P 500	3.0x	13.5x

Source: Cherry Tree Research, Capital IQ: 12/31/2017

TEBS valuation multiples reached record highs in 2017. We believe that it is unlikely that overall multiples will expand significantly in the near term, and companies in the TEBS 100 index will likely need to execute on their growth and profitability plans to maintain these valuations.

TEBS 100: Historical Median Valuation Metrics



Source: Cherry Tree Research, Capital IQ: 12/31/2017

Valuation Differentiators

When considering investments and acquisitions in the TEBS space, investors and buyers often have specific criteria that are unique to their situation. However, there are a few differentiating characteristics that have a significant impact on valuations of almost all companies.

Revenue Growth and Visibility – Because of the high gross margin and significant operating leverage potential of Technology Enabled Business Services companies, investors expect fast growth to lead to even faster profit growth over time. The other important valuation factor related to revenue is future visibility. If a company is growing quickly, but its sales do not include recurring revenue, investors will likely be skeptical towards the company's ability to maintain and grow revenue year after year.

Operating Leverage – Operating Leverage is a company's ability to grow profits faster than revenue by spreading incremental revenue over a base of fixed costs. This is most easily represented by gross margin. Companies with a high gross margin can yield high profit from every incremental dollar of revenue, and are therefore valued higher.

TEBS 100 Gross Margin vs. Valuation

Gross Margin	# of TEBS 100	EV/Revenue	EV/EBITDA
<50 %	19	2.9x	15.2x
50-60%	28	3.8x	17.6x
60-70%	23	4.8x	19.3x
>70%	30	7.4x	24.0x

Source: Cherry Tree Research, Capital IQ: 12/31/2017

Profitability – For companies that are not yet profitable, being able to demonstrate a “profit formula” is the key to achieving attractive valuations. If a company can correlate the investments it makes in product development or sales and marketing to future cash flow, investors can become more comfortable with a premium valuation. In the absence of significant growth, attractive valuations can still be generated when a company has profitability and cash flow.

Size – There is a strong correlation between the size of a company and the valuation multiples the company receives. Larger companies are generally less risky than smaller companies, can weather downturns better, and can take advantage of a wider range of opportunities.

TEBS 100 Index

COMPANY NAME	ENTERPRISE VALUE (\$mm)	REVENUE (\$mm)	GROSS MARGIN	EBITDA MARGIN	EV/ REVENUE	EV/ EBITDA	REVENUE GROWTH
Software							
8x8, Inc.	\$1,129	\$272	76.4%	-1.3%	4.2x	n/m	16.3%
ACI Worldwide, Inc.	\$3,315	\$1,041	57.0%	18.6%	3.2x	17.1x	7.1%
Adobe Systems Incorporated	\$82,445	\$7,302	86.2%	34.2%	11.3x	33.1x	24.7%
Allscripts Healthcare Solutions, Inc.	\$4,403	\$1,714	50.3%	10.1%	2.6x	25.3x	16.6%
Amber Road, Inc.	\$214	\$78	51.9%	-14.1%	2.8x	n/m	9.1%
American Software, Inc.	\$270	\$106	54.4%	13.9%	2.6x	18.4x	-3.3%
athenahealth, Inc.	\$5,478	\$1,179	52.0%	11.0%	4.6x	n/m	12.1%
Atlassian Corporation Plc	\$9,666	\$677	79.8%	-3.5%	14.3x	n/m	37.6%
Benefitfocus, Inc.	\$910	\$253	51.1%	-1.1%	3.6x	n/m	12.3%
Blackbaud, Inc.	\$4,761	\$770	54.4%	18.0%	6.2x	34.4x	8.6%
Bottomline Technologies (de), Inc.	\$1,463	\$358	54.1%	10.1%	4.1x	n/m	4.1%
BlackLine, Inc.	\$1,625	\$162	75.8%	-11.3%	10.0x	n/m	44.4%
CA, Inc.	\$14,029	\$4,078	85.7%	29.4%	3.4x	11.7x	0.4%
Callidus Software Inc.	\$1,775	\$240	61.0%	-2.7%	7.4x	n/m	21.4%
Citrix Systems, Inc.	\$13,172	\$3,464	85.2%	28.5%	3.8x	13.3x	19.2%
Commvault Systems, Inc.	\$1,930	\$673	87.0%	0.7%	2.9x	n/m	7.5%
Cornerstone OnDemand, Inc.	\$1,983	\$459	69.6%	-10.4%	4.3x	n/m	12.0%
Ellie Mae, Inc.	\$2,721	\$400	63.7%	20.5%	6.8x	33.2x	21.7%
Enghouse Systems Limited	\$1,222	\$252	69.2%	22.5%	4.8x	21.5x	5.6%
FireEye, Inc.	\$2,512	\$734	64.1%	-19.0%	3.4x	n/m	2.7%
Fiserv, Inc.	\$32,113	\$5,611	46.6%	31.4%	5.7x	18.2x	3.1%
Five9, Inc.	\$1,367	\$189	59.5%	2.9%	7.2x	n/m	22.8%
Fortinet, Inc.	\$6,322	\$1,441	74.3%	11.8%	4.4x	37.3x	19.2%
HubSpot, Inc.	\$3,105	\$346	79.3%	-10.4%	9.0x	n/m	39.5%
Intuit Inc .	\$40,434	\$5,285	84.7%	30.9%	7.7x	24.7x	11.1%
Jack Henry & Associates, Inc.	\$8,929	\$1,446	42.9%	31.0%	6.2x	19.9x	4.9%
Manhattan Associates, Inc.	\$3,285	\$598	58.6%	33.4%	5.5x	16.5x	0.0%
Medidata Solutions, Inc.	\$3,583	\$529	76.6%	15.5%	6.8x	n/m	20.8%
Mimecast Limited	\$1,555	\$222	73.7%	3.5%	7.0x	n/m	38.9%
MINDBODY, Inc.	\$1,212	\$171	71.2%	-4.5%	7.1x	n/m	32.6%
NIC Inc.	\$948	\$331	40.5%	25.1%	2.9x	11.4x	6.6%
Oracle Corporation	\$185,248	\$38,907	58.4%	38.9%	4.8x	12.2x	4.5%
Paycom Software, Inc.	\$4,648	\$407	85.3%	21.2%	11.4x	n/m	32.8%
Pegasystems, Inc.	\$3,477	\$801	66.5%	6.9%	4.3x	n/m	6.0%
Proofpoint, Inc.	\$3,903	\$477	72.2%	-7.1%	8.2x	n/m	38.7%
PROS Holdings, Inc.	\$897	\$162	59.1%	-36.1%	5.5x	n/m	4.5%
Q2 Holdings, Inc.	\$1,447	\$184	49.0%	-8.1%	7.8x	n/m	33.2%
QAD Inc.	\$596	\$298	52.1%	2.9%	2.0x	n/m	8.6%
Quality Systems, Inc.	\$893	\$524	56.4%	11.3%	1.7x	15.1x	6.0%
RealPage, Inc.	\$3,960	\$632	58.7%	14.0%	6.3x	n/m	16.9%
Red Hat, Inc.	\$20,298	\$2,777	85.2%	19.1%	7.3x	38.2x	19.4%
Salesforce.com, inc.	\$72,800	\$9,923	73.2%	5.6%	7.3x	n/m	25.5%
ServiceNow, Inc.	\$22,004	\$1,772	73.5%	-0.3%	12.4x	n/m	37.3%
Shopify Inc.	\$9,161	\$581	56.3%	-6.1%	15.8x	n/m	76.5%
Splunk Inc.	\$10,738	\$1,158	79.2%	-22.1%	9.3x	n/m	34.0%
SPS Commerce, Inc.	\$673	\$213	66.5%	10.9%	3.2x	29.0x	15.6%
Symantec Corporation	\$21,580	\$4,571	78.4%	13.0%	4.7x	36.2x	25.4%
Tableau Software, Inc.	\$4,575	\$878	87.4%	-12.8%	5.2x	n/m	12.7%
The Descartes Systems Group Inc	\$2,210	\$227	73.0%	33.1%	9.8x	29.4x	13.9%
The Ultimate Software Group, Inc.	\$6,391	\$900	62.0%	7.7%	7.1x	n/m	21.4%
Tyler Technologies, Inc.	\$6,487	\$816	47.4%	22.4%	7.9x	35.4x	13.1%
Upland Software, Inc.	\$489	\$89	65.0%	13.6%	5.5x	n/m	22.6%
Veeva Systems Inc.	\$7,055	\$651	69.4%	25.0%	10.8x	n/m	28.1%
VMware, Inc.	\$43,141	\$7,093	85.2%	26.1%	6.1x	23.3x	6.7%
Workday, Inc.	\$19,628	\$1,995	70.5%	-10.3%	9.8x	n/m	36.8%
25th Percentile	\$1,455	\$262	56.4%	-3.1%	4.1x	16.8x	6.9%
Median	\$3,583	\$632	66.5%	10.9%	6.1x	23.3x	16.3%
75th Percentile	\$9,414	\$1,444	76.5%	21.8%	7.7x	33.1x	25.4%

COMPANY NAME	ENTERPRISE VALUE (\$mm)	REVENUE (\$mm)	GROSS MARGIN	EBITDA MARGIN	EV/ REVENUE	EV/ EBITDA	REVENUE GROWTH
Information Services							
CoreLogic, Inc.	\$5,455	\$1,872	46.4%	21.2%	2.9x	13.8x	0.2%
CoStar Group, Inc.	\$10,416	\$930	77.6%	25.3%	11.2x	n/m	14.4%
Equifax Inc.	\$16,616	\$3,325	64.6%	35.0%	5.0x	14.3x	10.5%
FactSet Research Systems Inc.	\$7,860	\$1,262	53.2%	33.9%	6.2x	18.4x	10.3%
Fair Isaac Corporation	\$5,094	\$932	69.2%	22.7%	5.5x	24.1x	5.8%
Forrester Research, Inc.	\$661	\$331	59.6%	11.0%	2.0x	18.1x	2.2%
Gartner, Inc.	\$13,884	\$3,000	60.0%	12.2%	4.6x	37.8x	25.8%
IHS Markit Ltd.	\$21,788	\$3,600	62.3%	31.4%	6.1x	19.3x	31.6%
Moody's Corporation	\$33,071	\$3,981	71.2%	47.6%	8.3x	17.5x	12.8%
Morningstar, Inc.	\$4,005	\$881	57.9%	27.3%	4.5x	16.6x	11.8%
Nielsen Holdings plc	\$20,951	\$6,467	58.2%	25.9%	3.2x	12.5x	3.0%
S&P Global Inc.	\$45,668	\$5,874	71.1%	46.7%	7.8x	16.6x	4.2%
The Dun & Bradstreet Corporation	\$5,644	\$1,733	67.2%	24.5%	3.3x	13.3x	2.8%
TransUnion	\$12,242	\$1,864	66.9%	35.6%	6.6x	18.4x	12.6%
Verisk Analytics, Inc.	\$18,546	\$2,081	63.1%	46.3%	8.9x	19.3x	5.8%
25th Percentile	\$5,549	\$1,097	58.9%	23.6%	3.9x	14.9x	3.0%
Median	\$12,242	\$1,872	63.1%	27.3%	5.5x	17.8x	10.3%
75th Percentile	\$19,748	\$3,462	68.2%	35.3%	7.2x	19.1x	12.8%
Business Process Services							
Amdocs Limited	\$8,444	\$3,867	35.2%	18.9%	2.2x	11.5x	4.0%
Automatic Data Processing, Inc.	\$51,627	\$12,542	42.9%	21.6%	4.1x	19.0x	5.7%
Broadridge Financial Solutions, Inc.	\$11,561	\$4,172	25.3%	17.6%	2.8x	15.8x	30.5%
Cimpress N.V.	\$4,741	\$2,255	50.9%	6.4%	2.1x	32.7x	21.5%
CSG Systems International, Inc.	\$1,545	\$780	49.4%	17.8%	2.0x	11.1x	2.2%
Conduent Incorporated	\$5,136	\$6,043	15.1%	7.7%	0.8x	11.1x	-8.8%
Exela Technologies, Inc.	\$2,084	\$978	30.4%	14.2%	2.1x	15.0x	n/m
Genpact Limited	\$6,908	\$2,684	39.1%	16.8%	2.6x	15.3x	5.9%
Global Payments Inc.	\$20,190	\$4,277	49.2%	27.9%	4.7x	16.9x	n/m
InnerWorkings, Inc.	\$664	\$1,106	24.9%	4.2%	0.6x	14.3x	1.4%
Paychex, Inc.	\$24,248	\$3,238	70.7%	43.7%	7.5x	17.1x	5.7%
PFSweb, Inc.	\$180	\$281	27.6%	6.3%	0.6x	10.2x	5.9%
TTEC Holdings, Inc.	\$2,029	\$1,396	25.0%	12.3%	1.5x	11.9x	9.7%
WageWorks, Inc.	\$1,810	\$462	63.3%	19.9%	3.9x	19.7x	33.1%
Worldpay, Inc.	\$16,668	\$3,916	52.5%	23.3%	4.3x	18.2x	12.6%
25th Percentile	\$1,919	\$1,042	26.4%	10.0%	1.7x	11.7x	1.4%
Median	\$5,136	\$2,684	39.1%	17.6%	2.2x	15.3x	5.7%
75th Percentile	\$14,114	\$4,044	50.1%	20.7%	4.0x	17.7x	12.6%
Infrastructure Services							
Akamai Technologies, Inc.	\$10,907	\$2,456	65.4%	26.8%	4.4x	16.5x	6.6%
Boingo Wireless, Inc.	\$911	\$192	32.6%	23.9%	4.7x	19.9x	25.4%
Box, Inc.	\$2,787	\$479	73.0%	-25.2%	5.8x	n/m	28.3%
Carbonite, Inc.	\$692	\$231	70.5%	3.5%	3.0x	n/m	22.6%
Cogent Communications Holdings, Inc.	\$2,492	\$465	58.1%	31.3%	5.4x	17.1x	9.0%
Endurance International Group Holdings, Inc.	\$3,093	\$1,175	50.5%	23.5%	2.6x	11.2x	16.1%
Equinix, Inc.	\$43,883	\$4,111	50.4%	42.8%	10.7x	24.9x	20.9%
GoDaddy Inc.	\$8,966	\$2,116	64.8%	11.7%	4.2x	36.2x	18.4%
Gogo Inc.	\$1,567	\$671	52.8%	11.1%	2.3x	21.1x	16.8%
GTT Communications, Inc.	\$3,123	\$704	49.4%	24.7%	4.4x	18.0x	40.8%
Internap Corporation	\$809	\$285	51.6%	27.2%	2.8x	10.5x	-6.0%
Limelight Networks, Inc.	\$428	\$180	57.0%	5.1%	2.4x	n/m	7.6%
Pure Storage, Inc.	\$2,887	\$913	65.5%	-16.8%	3.2x	n/m	40.3%
Web.com Group, Inc.	\$1,720	\$748	68.9%	20.3%	2.3x	11.3x	13.0%
Zayo Group Holdings, Inc.	\$14,454	\$2,338	63.9%	45.4%	6.2x	13.6x	25.7%
25th Percentile	\$1,239	\$375	51.1%	8.1%	2.7x	12.5x	9.0%
Median	\$2,787	\$704	58.1%	23.5%	4.2x	17.1x	18.4%
75th Percentile	\$6,045	\$1,645	65.5%	27.0%	5.1x	20.5x	25.7%

Source: Cherry Tree Research, Capital IQ: 12/31/2017

M&A ACTIVITY

The M&A outlook for Technology Enabled Business Services companies will likely be strong for companies with solid financials and differentiated solutions. We believe that strategic buyers will continue to rely on M&A for revenue and earnings growth, and that financial buyers such as private equity firms will likely provide additional demand as their investment criteria continues to broaden beyond manufacturing and distribution companies. On the supply side, strong deal flow in recent years will likely limit the crop of companies that are looking to sell, as fewer companies have matured to a point to seek exit strategies. Companies that have achieved strong financial profiles and enviable strategic positions in their markets are likely to see robust buyer interest and strong valuations in an M&A process.

Select M&A Activity

DATE	TARGET	ACQUIRER	ENTERPRISE VALUE (\$mm)	REVENUE (\$mm)	EBITDA (\$mm)	EBITDA MARGIN	EV/ REV	EV/ EBITDA	
Software									
01/24/17	AppDynamics LLC	Cisco Systems, Inc.	\$3,902.9	\$206.5	-	-	18.9x	-	
02/13/17	RDM Corporation	Deluxe Corporation	\$87.9	\$27.5	\$7.2	26.2%	3.2x	12.2x	
02/23/17	Halogen Software, Inc.	Saba Software, Inc	\$229.4	\$95.6	\$8.3	8.7%	2.4x	27.5x	
03/01/17	NoWait, Inc	Yelp, Inc.	\$40.0	\$4.1	-	-	9.8x	-	
03/13/17	DH Corporation	Misys Limited	\$4,648.2	\$1,660.1	\$318.4	19.2%	2.8x	14.6x	
04/28/17	Tangoe, Inc.	Asentinel LLC	\$269.9	\$245.4	\$26.2	10.7%	1.1x	10.3x	
05/01/17	Jive Software, Inc.	Wave Systems Corp.	\$343.5	\$202.1	\$5.0	2.5%	1.7x	69.1x	
05/03/17	Kofax Limited	Thoma Bravo, LLC	\$1,350.0	-	-	-	-	-	
05/26/17	iSystems, LLC	Asure Software, Inc.	\$76.5	\$13.0	\$0.8	6.1%	5.9x	96.3x	
05/30/17	Xactly Corporation	Vista Equity Partners	\$530.6	\$96.5	-	-	5.5x	-	
06/05/17	Covisint Corporation	Open Text Corporation	\$69.2	\$69.2	-	-	1.0x	-	
06/13/17	Monitise plc	Fiserv	\$45.7	\$65.3	-	-	0.7x	-	
06/21/17	ARI Network Services, Inc.	True Wind Capital	\$137.8	\$51.0	\$6.5	12.8%	2.7x	21.1x	
06/22/17	EnerNOC, Inc.	Enel Green Power North America, Inc.	\$293.6	\$419.4	-	-	0.7x	-	
07/25/17	Intacct Corporation	The Sage Group plc	\$850.0	\$87.6	-	-	9.7x	-	
07/26/17	Guidance Software, Inc.	Open Text Corporation	\$245.3	\$106.6	-	-	2.3x	-	
08/15/17	MacroPoint, LLC	The Descartes Systems Group Inc	\$106.6	\$12.5	-	-	8.5x	-	
08/21/17	Sequel Business Solutions Limited	Verisk Analytics, Inc.	\$250.0	\$26.0	\$12.0	46.2%	9.6x	20.8x	
08/31/17	RevStream Inc.	Aptitude Software Limited	\$12.2	\$2.7	-	-	4.5x	-	
08/31/17	Velocify, Inc.	Ellie Mae, Inc.	\$128.0	\$45.7	-	-	2.8x	-	
09/18/17	Silver Spring Networks, Inc.	Itron, Inc.	\$838.8	\$441.5	-	-	1.9x	-	
09/25/17	Folio Dynamics, Inc	Envestnet, Inc.	\$195.0	\$39.8	-	-	4.9x	-	
09/28/17	Exa Corporation	Dassault Systems	\$385.9	\$72.8	\$1.5	2.0%	5.3x	260.9x	
10/23/17	Broadsoft, Inc.	Cisco Systems, Inc.	\$1,917.0	\$361.7	\$23.8	6.6%	5.3x	80.5x	
10/27/17	Trayport Limited	TMX Group Limited	\$550.0	\$57.9	\$30.1	51.9%	9.5x	18.3x	
11/02/17	Black Duck Software	Synopsys, Inc.	\$548.0	\$57.5	-	-	9.5x	-	
11/20/17	CYREN Ltd.	Warburg Pincus LLC	\$72.9	\$31.7	-	-	2.3x	-	
12/18/17	Aconex Limited	Oracle Corporation	\$1,609.9	\$161.0	-	-	10.0x	-	
						Median	10.7%	4.5x	20.8x

DATE	TARGET	ACQUIRER	ENTERPRISE VALUE (\$mm)	REVENUE (\$mm)	EBITDA (\$mm)	EBITDA MARGIN	EV/REV	EV/EBITDA	
Information Services									
01/05/17	CEB Inc.	Gartner, Inc.	\$3,680.7	\$943.8	\$200.0	21.2%	3.9x	18.4x	
03/03/17	RISI, Inc.	Euromoney Institutional Investor	\$125.0	\$29.8	\$7.7	25.9%	4.2x	16.2x	
05/01/17	Angie's List, Inc.	HomeAdvisor, Inc.	\$587.9	\$309.4	\$11.1	3.6%	1.9x	52.8x	
07/03/17	Bankrate, Inc.	Red Ventures Holdco, LP	\$1,434.7	\$478.2	\$101.0	21.1%	3.0x	14.2x	
07/24/17	WebMD Health Corp	Kohlberg, Kravis Roberts (KKR)	\$2,641.2	\$713.8	\$184.7	25.9%	3.7x	14.3x	
08/29/17	Advisory Board Company	OptumInsight, Inc.	\$2,895.9	\$812.5	\$206.3	25.4%	3.6x	14.0x	
09/05/17	eVestment Alliance, LLC	Nasdaq, Inc.	\$705.0	\$79.2	-	-	8.9x	-	
09/07/17	Institution Shareholder Services Inc.	Genstar Capital, LLC	\$720.0	\$146.9	-	-	4.9x	-	
09/12/17	ForRent.com	Apartments.com	\$385.0	\$98.7	\$15.0	15.2%	3.9x	25.7x	
10/05/17	Onvia, Inc.	Roper Technologies, Inc.	\$65.6	\$24.3	-	-	2.7x	-	
11/30/17	Power Advocate, Inc.	Verisk Analytics, Inc.	\$280.0	\$36.0	\$11.0	30.6%	7.8x	25.5x	
						Median	23.3%	3.9x	17.3x
Business Process Services									
02/10/17	Aon, Benefits and HR Division	The Blackstone Group	\$4,800.0	\$2,285.7	\$396.7	17.4%	2.1x	12.1x	
02/14/17	Tio Networks Corp.	Paypal Holdings, Inc.	\$241.8	\$93.0	\$9.8	10.5%	2.6x	24.8x	
04/10/17	RetailMeNot, Inc.	Harland Clarke Holdings	\$463.9	\$289.9	\$30.7	10.6%	1.6x	15.1x	
05/29/17	CardConnect Corp	First Data Corporation	\$716.3	\$596.9	\$26.9	4.5%	1.2x	26.6x	
07/05/17	Archway Technology Partners, LLC	SEI Investments Co.	\$88.0	\$18.0	\$3.6	20.1%	4.9x	24.4x	
07/05/17	Worldpay Group plc	Vantiv, Inc.	\$8,921.8	\$1,189.6	\$452.9	38.1%	7.5x	19.7x	
08/28/17	MaxPoint Interactive, Inc.	Harland Clarke Holdings	\$105.0	\$150.0	-	-	0.7x	-	
09/05/17	YuMe, Inc.	RhythmOne plc	\$112.7	\$161.0	\$10.1	6.3%	0.7x	11.2x	
10/17/17	IntraLinks Holdings, Inc.	Siris Capital Group, LLC	\$1,020.8	\$291.6	\$22.1	7.6%	3.5x	46.1x	
11/28/17	Leapforce, Inc.	Appen Limited	\$80.0	\$47.1	\$8.8	18.7%	1.7x	9.1x	
12/18/17	IWCO Direct Holdings Inc.	ModusLink Global Solutions Inc.	\$475.6	\$475.6	\$82.0	17.2%	1.0x	5.8x	
						Median	13.9%	1.7x	17.4x
Infrastructure Services									
01/20/17	eNom, Inc.	Tucows Inc.	\$83.5	\$167.0	\$1.4	0.8%	0.5x	61.6x	
03/07/17	Nimble Storage, Inc.	Hewlett Packard Enterprise	\$1,065.1	\$409.7	-	-	2.6x	-	
05/09/17	West Corporation	Apollo Global Management, LLC	\$4,955.2	\$2,252.4	\$652.0	28.9%	2.2x	7.6x	
06/09/17	DuPont Fabros Technology, Inc.	Digital Realty Trust, Inc.	\$7,131.9	\$528.3	\$322.7	61.1%	13.5x	22.1x	
06/14/17	Rightside Group, Ltd.	Donuts Inc.	\$135.1	\$58.8	-	-	2.3x	-	
06/27/17	Sandvine Corporation	Procera Networks, Inc.	\$425.7	\$146.8	\$21.9	14.9%	2.9x	19.4x	
07/27/17	ShoreTel, Inc.	Mitel Networks Corporation	\$420.7	\$350.6	\$9.0	2.6%	1.2x	46.9x	
09/21/17	Edge Hosting, LLC	DataBank Holdings, Ltd.	\$44.0	\$17.6	-	-	2.5x	-	
10/26/17	Gigamon Inc.	Elliot Associates, QIA	\$1,329.1	\$302.1	-	-	4.4x	-	
11/27/17	Barracuda Networks, Inc.	Thoma Bravo	\$1,405.1	\$369.8	\$32.6	8.8%	3.8x	43.1x	
12/11/17	IO Data Centers, LLC	Iron Mountain Incorporated	\$1,340.0	\$144.1	-	-	9.3x	-	
						Median	11.9%	2.6x	32.6x

ABOUT CHERRY TREE

History and Background

Cherry Tree is a private investment banking and wealth management firm headquartered in Minneapolis, Minnesota. Our firm specializes in serving middle market companies and their owners, whether private, public, or divisions of larger corporations. Founded in 1980, Cherry Tree managed several successful institutional private funds focusing on platform acquisitions. Those funds led to over 300 financings, 26 public offerings, and 41 company divestitures. In 1996, the firm diversified into investment banking services to take advantage of its long history and position in the market. Then, in 2003 we added wealth management to our operations by acquiring and then growing an existing business. Our professionals have collectively been members on over 80 boards of directors, worked with over 250 different companies, and advised on hundreds of financings and M&A transactions.

Broad Market Expertise

Cherry Tree has been working with middle market companies for over 35 years. Our core M&A activity is in **Sell-Side** engagements with middle market companies where ownership wants to achieve some liquidity goals or desires to recapitalize their business to better position their company for future growth. Additionally, we represent **Buy-Side** clients attempting to add acquisition strategies to complement their organic growth efforts. Finally, we are experts in the capital markets, having previously managed four private funds in the 1980s and 1990s. Our firm has been primarily focused on investment banking transactions since 1996 and has an exceptional team of dedicated investment banking professionals. Most of our Managing Directors have had C-level operating experience in their backgrounds as CEOs or CFOs, and collectively represent more than 200 years of transaction and operating experience.

Research

We distinguish our firm by conducting comprehensive research and publishing our findings in reports that provide an in-depth analysis on selected industries and overall market conditions. For each client assignment, we apply our internal research capabilities to become knowledgeable in the client's industry as the foundation to providing the highest value to our clients. Some of our industry research is sponsored by our clients that have an interest in specific industry segments.

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