MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY

Software Industry

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This rating methodology replaces "Software Industry", last revised on December 29, 2015. We have updated some outdated links and removed certain issuer-specific information.

Summary

This rating methodology explains our approach to assessing credit risk for companies in the software industry globally and is intended to provide general guidance that helps companies, investors, and other interested market participants understand how qualitative and quantitative risk characteristics are likely to affect rating outcomes for companies in the software industry. This document does not include an exhaustive treatment of all factors that are reflected in our ratings but should enable the reader to understand the qualitative considerations and financial information and ratios that are usually most important for ratings in this sector.

This report includes a detailed scorecard. The scorecard is a reference tool that can be used to approximate credit profiles within the software sector in most cases. The scorecard provides summarized guidance for the factors that are generally most important in assigning ratings to companies in the software industry. However, the scorecard is a summary that does not include every rating consideration. The weights shown for each factor in the scorecard represent an approximation of their importance for rating decisions but actual importance may vary substantially. The scorecard-indicated outcome is not expected to match the actual rating of each company.

The scorecard contains five factors that are important in our assessments for ratings in the software sector:

1. Scale
2. Business Profile
3. Profitability
4. Leverage and Coverage
5. Financial Policy

Certain factors also encompass a number of sub-factors. An issuer's scoring on a particular scorecard factor or sub-factor often will not match its overall rating.

This rating methodology is not intended to be an exhaustive discussion of all factors that our analysts consider in assigning ratings in this sector. We note that our analysis for ratings in this sector covers factors that are common across all industries such as ownership, management, liquidity, corporate legal structure, governance, and country related risks which are not explained in detail in this document, as well as other factors that can be meaningful on a company-specific basis. Our ratings consider these and other qualitative considerations that do not lend themselves to a transparent presentation in a scorecard format. The scorecard used for this rating methodology reflects a decision to favor a relatively simple and transparent presentation rather than a more complex scorecard that would map scorecard-indicated outcomes more closely to actual ratings.

Highlights of this report include:

» An overview of the rated universe

» A summary of the rating methodology

» A description of factors that drive rating quality

» Comments on the rating methodology assumptions and limitations, including a discussion of rating considerations that are not included in the scorecard

The Appendices show the full scorecard (Appendix A), a brief industry overview (Appendix B), and some considerations regarding the pro forma assessment of acquisitive software companies (Appendix C).

This methodology describes the analytical framework used in determining credit ratings. In some instances, our analysis is also guided by additional publications which describe our approach for analytical considerations that are not specific to any single sector. Examples of such considerations include but are not limited to: the assignment of short-term ratings, the relative ranking of different classes of debt and hybrid securities, how sovereign credit quality affects non-sovereign issuers, and the assessment of credit support from other entities.[1]

About the Rated Universe

We rate software companies globally. This methodology is applicable to companies that generate approximately 50% or more of their revenue or EBITDA from the sale and support of software and software services to consumer or enterprise end-markets. The majority of companies included in this methodology are enterprise-focused software companies with a substantial proportion of recurring revenue, primarily

[1] The methodologies covering our approach to these cross-sector considerations can be found in the Related Publications section of this report.

driven by annual maintenance revenues or subscription revenue from well-established customer bases. These companies produce software packages and solutions from internally developed or acquired technologies and physically or virtually deliver these products to end-customers for installation and use at the customer's premises. Software companies are typically compensated in the form of license, support and maintenance or subscription revenues as well as ancillary consulting and other services. Many companies sell or support software as a component of their business. However, they are not covered by this rating methodology as their credit profiles also comprise business and consumer services, communications equipment, or technology hardware, for example. Companies in those sectors are covered by other published rating methodologies[2].

The software industry is relatively young in comparison to long-standing industries such as automotive, homebuilding, and healthcare. The sector grew tremendously through the 1980's and 1990's both for consumer and enterprise users. Although the industry has since shown some signs of maturing, it continues to evolve as new products are developed, new architectures take hold and new delivery methods gain traction.

The great expansion of debt financing within the software industry was propelled in part by recognition from private equity groups and leveraged lenders of the stability of maintenance revenue streams generated by established enterprise software firms and the benefits of consolidating what was a fairly fragmented industry. Leveraged buyouts and strategic acquisitions have subsequently driven the vast majority of new software entrants to the debt markets. Post consolidation, software companies can often provide a broader suite of interoperable products to customers while benefitting from cost savings achieved through combining companies.

[2] A list of our credit rating methodologies can be accessed by using the link in the Related Publications section of this report.

About This Rating Methodology

This report explains the rating methodology for software companies in six sections, which are summarized as follows:

1. Identification and Discussion of the Scorecard Factors

The scorecard in this rating methodology is comprised of five rating factors. Some of the factors are comprised of sub-factors that provide further detail.

FIGURE 1
Software Industry Scorecard

Scorecard Factors	Factor Weighting	Sub-Factors	Sub-Factor Weighting
Business Profile	25%	Product Line Diversity	5%
		Geographic Diversity	5%
		End-Market Diversity	5%
		Market Share	10%
Scale	15%	Revenue	10%
		Free Cash Flow	5%
Profitability	10%	Operating Income ROA (Net of Cash + Marketable Securities)	10%
Leverage and Coverage	30%	Debt/EBITDA	10%
		(EBITDA-CapEx)/ Interest Expense	5%
		Free Cash Flow/Debt	10%
		(Cash + Marketable Securities) / Debt	5%
Financial Policy	20%	Financial Policy	20%
Total	100%	**Total**	100%

2. Measurement or Estimation of Factors in the Scorecard

We explain our general approach for scoring each scorecard factor and show the weights used in the scorecard. We also provide a rationale for why each of these scorecard components is meaningful as a credit indicator. The information used in assessing the sub-factors is generally found in or calculated from information in company financial statements, derived from other observations or estimated by our analysts.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends in a company's performance as well as for peer comparisons. We utilize historical data from recent twelve-month periods of reported results (the calendar period might not be the same for all companies), and in certain cases, pro forma for recent or pending acquisitions or capital structure changes, in the scorecard. However, the factors in the scorecard can be assessed using various time periods. For example, rating committees may find it analytically useful to examine both historic and expected future performance for periods of several years or more.

All of the quantitative credit metrics incorporate Moody's standard adjustments to the income statement, cash flow statement and balance sheet amounts for items such as under-funded pension obligations and operating leases.[3] We may also make other analytical adjustments that are specific to a particular company. For example, we may re-class to expense amounts capitalized as software development costs for customer facing software when the information is available. This levels the playing field for companies that chose to capitalize certain capital expenditures rather than expense them in the income statement (although only a small proportion of software companies choose this practice and the amounts tend to be relatively small).

3. Mapping Scorecard Factors to the Rating Categories

After estimating or calculating each sub-factor, the outcomes for each of the sub-factors are mapped to a broad Moody's rating category (Aaa, Aa, A, Baa, Ba, B, Caa, or Ca).

4. Assumptions, Limitations and Rating Considerations Not Included in the Scorecard

This section discusses limitations in the use of the scorecard to map against actual ratings, some of the additional factors that are not included in the scorecard but can be important in determining ratings, and limitations and assumptions that pertain to the overall rating methodology.

5. Determining the Overall Scorecard-Indicated Outcome[4]

To determine the overall scorecard-indicated outcome, we convert each of the sub-factor scores into a numeric value based upon the scale below.

Aaa	Aa	A	Baa	Ba	B	Caa	Ca
1	3	6	9	12	15	18	20

The numerical score for each sub-factor is multiplied by the weight for that sub-factor with the results then summed to produce a composite weighted factor score. The composite weighted factor score is then mapped back to an alphanumeric rating based on the ranges in the table below.

3 More information about our financial statement adjustments in the analysis of non-financial corporations can be accessed using the link in the Related Publications section of this report.

4 In general, the scorecard-indicated outcome is oriented to the Corporate Family Rating (CFR) for speculative-grade issuers and the senior unsecured rating for investment-grade issuers. For issuers that benefit from ratings uplift due to parental support, government ownership or other institutional support, the scorecard-indicated outcome is oriented to the baseline credit assessment. For an explanation of baseline credit assessment, please refer to our rating methodology on government-related issuers. Individual debt instrument ratings also factor in decisions on notching for seniority level and collateral. The documents that provide broad guidance for these notching decisions are our rating methodologies on loss given default for speculative grade non-financial companies and for aligning corporate instrument ratings based on differences in security and priority of claim. The link to these and other sector and cross-sector credit rating methodologies can be found in the Related Publications section of this report.

FIGURE 2
Scorecard-Indicated-Outcome

Scorecard-Indicated Outcome	Aggregate Weighted Total Factor Score
Aaa	x < 1.5
Aa1	1.5 ≤ x < 2.5
Aa2	2.5 ≤ x < 3.5
Aa3	3.5 ≤ x < 4.5
A1	4.5 ≤ x < 5.5
A2	5.5 ≤ x < 6.5
A3	6.5 ≤ x < 7.5
Baa1	7.5 ≤ x < 8.5
Baa2	8.5 ≤ x < 9.5
Baa3	9.5 ≤ x < 10.5
Ba1	10.5 ≤ x < 11.5
Ba2	11.5 ≤ x < 12.5
Ba3	12.5 ≤ x < 13.5
B1	13.5 ≤ x < 14.5
B2	14.5 ≤ x < 15.5
B3	15.5 ≤ x < 16.5
Caa1	16.5 ≤ x < 17.5
Caa2	17.5 ≤ x < 18.5
Caa3	18.5 ≤ x < 19.5
Ca	x ≥ 19.5

For example, an issuer with a composite weighted factor score of 11.7 would have a Ba2 scorecard-indicated outcome

6. Appendices

The Appendices provide the full scorecard and also provide additional commentary and insights on our view of credit risks in this industry.

Rating Factor 1: Business Profile (25% weight)

Why it Matters

The Business Profile factor provides an indication of a company's qualitative strength on several measures of diversification and our assessment of market share. Business Profile provides an indication for the likely stability and sustainability of the company's cash flows. To score highly on the factor overall, a company must score highly on both diversification and market share. A strong position in one of these areas with weakness in the other can limit long-term stability of cash flows.

Product line diversity helps to offset constantly evolving trends within the software industry. New product categories are continually emerging and reliance on any one line can carry significant risks. Product line diversification is increasingly important as customers look to reduce the number of software suppliers they rely on and improve integration and interoperability of different software platforms within the customer organization. Building a broad suite of products has been a major driver of consolidation in the enterprise software industry. While niche specialist firms can still operate profitably, customers increasingly look to an integrated software solution.

Geographic diversity is viewed positively because it reduces reliance on any region to generate profitability. While software often requires some modification to adapt to local languages, financial reporting, cultural or regulatory issues, there are often beneficial economies of scale if a product can be adapted for global use.

End-market diversity is also viewed positively because it mitigates the risk that a change in any individual industry or vertical market will significantly impair profitability and cash flow.

Market share is important for credit assessment as it can indicate the level of competitive success, the strength of customer relationships and likely prospects for future performance. Particularly in the enterprise software sector, software tends to be "sticky" and customers do not change vendors often. When a customer's employees are well versed in software that is critical to a customer's operations, the incumbent software vendor tends to have the best chance at renewing or upgrading aging systems or expanding the number of employees or geographic locations that use a software system.

How We Assess it For the Scorecard

Scorecard scoring for the business profile factor is assessed on a qualitative basis. The factor is weighted 25% in determining the overall scoring outcome from the scorecard. The weights and criteria for the four sub-factors are as follows:

Factor 1: Business Profile (25%)

	Sub-Factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Product Line Diversity	5%	Operates in all 3 Primary industry segments with a broad portfolio in each	Operates in all 3 Primary segments, with a broad portfolio in 2 and a limited portfolio in 1	Operates in all 3 Primary segments, with 1 broad and 2 limited or, Operates in 2 Primary segments with a broad portfolio in each	Operates in 2 Primary segments with a broad portfolio in 1 and limited in the other	Operates in 2 Primary segments with a limited portfolio in each or Operates in 1 Primary segment with a broad portfolio in that segment	Operates in 1 Primary segment with a limited portfolio within that segment	Very limited portfolio of products	One product company
Geographic Diversity	5%	Globally extremely well diversified with significant presence in all regions and minimal concentration in any one region; no single region expected to account for more than 30% of revenues	Globally well diversified; no single region expected to account for more than 35% of revenue; no two regions expected to be more than 65% of revenue	Globally diversified; no single region expected to account for more than 45% of revenue; no two regions expected to be more than 65% of revenue	Main region expected to account for approximately 45 - 55% of revenue or less than 45% but the two largest regions account for no more than 75% of revenue	Main region expected to account for approximately 55 - 65% of revenue	Main region expected to account for approximately 65 - 80% of revenue	Main region expected to account for 80% or greater of revenue	One small region or country expected to account for over 80% of revenue
End-Market Diversity	5%	Extremely well diversified with largest market expected to be no more than 5% of sales	Very well-diversified end markets with very limited concentration expected in any end market	Well-diversified end markets with minimal concentration expected in any end market	Diversified end markets but with modest concentration expected in one or more end markets	Concentration in one or more end markets but no single market expected to generate half of sales	Limited diversification with largest end market expected to generate more than half of sales	Very limited diversification with largest end market expected to generate more than two-thirds of sales	Expected to have one narrow end market only
Market Share	10%	Expected to be #1 in all key market segments with >50% market share in majority of segments	Expected to have #1 or #2 market share in all key markets	Expected to be #1 or 2 in majority of key markets	Expected to be among top 3 in majority of key markets	Expected to be a strong niche player in majority of markets	Expected to be strong local or strong but small niche player in majority of markets	Expected to be small local player or very small niche player	Not expected to have niche of any significance

Product Line Diversity:

The sub-factor is scored based on our estimates of the number of primary industry segments the company operates in and the breadth of product lines within those primary industry segments. For a company to have a broad portfolio within a primary industry segment, the company would need to have substantial product offerings within several sub-segments within the primary product category. For example, a company that has only a broad lineup of engineering applications would typically be considered to have a limited portfolio within the Applications industry segment and thus a B rating for the sub-factor. The primary industry categories and secondary categories we use in determining the sub-factor scoring are:

FIGURE 3
Software Industry Segments

Primary Industry Segment	Example Key Sub-Segment
System Infrastructure	
	Operating Systems
	Security Software
	Systems Management
	Storage Software
Database/Application Development	
	Database
	Middleware
	Application Development and Quality Assurance
	Application Deployment
Applications	
	Consumer Applications
	Enterprise Resource Planning
	Customer Relationship Management
	Engineering Applications

This is not an exhaustive list of all available industry sub-segments but rather a few examples of product segments that fit within the methodology's criteria of a software sub-segment. Many other meaningful size industry sub-segments exist and new sub-segments may emerge over time due to the high rate of change in the software industry.

Geographic Diversity:

In scoring this sub-factor, we examine trends for annual revenue for major geographic regions or countries. Our assessment of Geographic Diversity involves a degree of estimation that considers information from other sources, particularly in estimating the underlying regional components of sales made to multinational customers.

Generally, we view a region as being a major portion of a global market, but the size of regional markets differs by product which is a consideration in how we view regional importance.

End-Market Diversity:

Our scoring of this sub-factor uses data from various sources, including financial reports. In estimating the relative proportion of each company's revenues in different end-markets or vertical markets, we generally look at fairly broad industry categories rather than very specific industry categories. As an example, within the financial sector, we would consider the insurance market as distinct from the banking market for software but would likely not treat community banking as separate from credit unions.

Market Share:

We estimate market share based on the market segments that the company participates in, using information from various sources, including financial reports. We generally estimate market share within significant industry market segments (which generally correspond to the Key Sub-Segments that were previously specified). Typically, this implies markets in excess of $2.5 billion in revenue.

Rating Factor 2: Scale (15% weight)

Why it Matters

Scale tends to be an indicator of success in developing breadth of customers and overall depth of business. It also typically confers economies of scale in research, engineering and development, and corporate overhead. Larger companies with strong cash flows also typically have greater access to capital markets and greater options in making acquisitions. Software companies often rely on acquisitions to obtain critical technology or promising product lines.

The sub-factors used as indicators of scale are Revenue and Free Cash Flow. While gross revenue is a useful direct indicator of scale, free cash flow adds an indicator for financial flexibility and ability to make acquisitions. Both measures favor companies that operate in larger and more substantial markets.

How We Assess it For the Scorecard

We weight Revenue at 10% and weight Free Cash Flow at 5% in determining the overall scoring outcome from the scorecard.

Revenue:

We may use the trailing four quarters revenues in U.S dollars.

Free Cash Flow:

The sub-factor is defined as cash flow from operations less capital expenditures, less dividends. We may use the trailing four quarters free cash flow in U.S. dollars. Many investment grade software firms typically engage in substantial share repurchase activity. While ratings consider the impact of this activity particularly in light of current and projected operating performance and acquisition strategy, share repurchases are not included in calculating free cash flow.

Factor 2: Scale (15%)

	Sub-Factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Revenue (USD Billion)	10%	≥$60	$30 - 60	$15 - 30	$3 - 15	$0.75 - 3	$0.25 - 0.75	$0.1 - 0.25	< $0.1
Free Cash Flow (USD Billion)	5%	≥$12.5	$7.5 - 12.5	$3.75 - 7.5	$0.75 - 3.75	$0.1875 - 0.75	$0.0625 - 0.1875	$0 - $0.0625	< $0

Rating Factor 3: Profitability (10% weight)

Why it Matters

Profitability is one measure for the current economic success of the business and the effectiveness of management. For this factor, we use a return on assets measure based on operating income divided by average assets (net of cash and marketable securities). The measure captures profitability on an un-levered basis and is useful in comparing companies separate from our evaluation of capital structure. The measure may benefit companies that develop new products internally rather than through acquisitions, as companies tend to pay well in excess of development costs when making acquisitions. While we view acquisitions as often critical to a company's long-term success, we consider companies that are able to generate successful new products in-house as generally having an advantage over firms that have to rely heavily on acquisitions. Many companies typically use a combination of internally developed technology and products as well as acquired technology and products.

How We Assess it For the Scorecard

The Profitability factor is weighted at 10% in determining the overall scoring outcome from the scorecard.

Return on Assets:

The scoring uses the trailing four quarters of operating income divided by average assets (net of cash and marketable securities) over the period. Average assets is calculated by taking the average of total assets less the average of cash, cash equivalents and short-term investments over the past 2 years.

Factor 3: Profitability (10%)

	Sub-Factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Operating Income ROA (Net of Cash + Marketable Securities)	10%	≥30%	25 - 30%	20 - 25%	15 - 20%	10 - 15%	5 - 10%	0 - 5%	< 0%

Rating Factor 4: Leverage and Coverage (30% weight)

Why it Matters

Leverage and Coverage measures are indicators of a company's financial flexibility and long-term viability. Financial flexibility is critical to software companies to adapt to evolving technology and trends. Software companies need resources to invest in research and development as well as to make strategic acquisitions both to acquire critical technology and to expand product suites to meet shifting customer demands.

Established enterprise software companies tend to have a substantial base of recurring maintenance or subscription revenue which can facilitate higher amounts of leverage, but enterprise software companies are still subject to economic downturns as new license and service sales tend to decline significantly during such periods. Enterprise software customers also look to the long-term viability of their software suppliers, as customers rely on the software vendor to provide continuous support over the life of a software system. Software systems tend to remain in place for many years and are often critical to the operations of the customer.

This factor is comprised of four sub-factors:

Debt to EBITDA is an indicator of debt serviceability and leverage and is commonly used in this sector as a proxy for comparative financial strength.

(EBITDA-Capex) to Interest is an indicator of a company's ability to pay interest and other fixed charges from its operating performance.

Free Cash Flow to Debt is an indicator of a company's ability to repay principal on its outstanding debt. It is a measure or estimate for cash flow generation after dividends in relation to outstanding debt. Free cash flow also captures the upfront nature of software maintenance revenue and subscription payments which are often paid annually in advance.

Cash and Marketable Securities to Debt provides a measure of a company's financial flexibility and the ability to absorb unforeseen events or make strategic acquisitions. While companies in this sector spend considerable amounts on research and development, they also rely on acquisitions to supplement their R&D spending. Companies may rely on acquisitions to broaden their product line-up as customers increasingly look to a smaller group of vendors to provide broader, more integrated, software products and systems.

How We Assess it For the Scorecard

A. Debt/EBITDA:

This ratio is calculated as total debt divided by trailing four quarters EBITDA.

B. (EBITDA-Capex)/Interest:

This ratio is calculated as EBITDA less capital expenditures for the trailing four quarter period divided by interest expense for the same period.

C. FCF/Debt:

This ratio is calculated as free cash flow for the trailing four quarters divided by ending total debt. Free cash flow is defined as cash from operations less capital expenditures less dividends.

D. (Cash +Marketable Securities) / Debt:

This ratio is calculated as the sum of cash, cash equivalents, marketable securities and short-term investments divided by debt at the end of the period.

Factor 4: Leverage and Coverage (30%)

	Sub-Factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Debt/EBITDA	10%	< 0.5x	0.5 - 1x	1 - 1.5x	1.5 - 2.5x	2.5 - 4x	4 - 6.5x	6.5 - 9x	≥9x
(EBITDA-CapEx)/ Interest Expense	5%	≥22x	16 - 22x	9 - 16x	4.5 - 9x	2.5 - 4.5x	1.25 - 2.5x	0.25 - 1.25x	< 0.25x
FCF/Debt	10%	≥75%	50 - 75%	35 - 50%	20 - 35%	12.5 - 20%	5 – 12.5%	0 - 5%	< 0%
(Cash + Marketable Securities) / Debt	5%	≥175%	125 - 175%	75 - 125%	35 - 75%	20 - 35%	7.5 - 20%	2.5 - 7.5 %	< 2.5%

Rating Factor 5: Financial Policy (20%)

Financial Policy - Why it Matters

Management and board tolerance for financial risk is a rating determinant as it directly affects debt levels, credit quality, and the risk of adverse changes in financing and capital structure.

Our assessment of financial policies includes the perceived tolerance of a company's governing board and management for financial risk and the future direction for the company's capital structure. Considerations include a company's public commitments in this area, its track record for adhering to commitments, and our views on the ability for the company to achieve its targets.

Financial risk tolerance serves as a guidepost to investment and capital allocation. An expectation that management will be committed to sustaining an improved credit profile is often necessary to support an upgrade. For example, we may not upgrade a company that has built flexibility within its rating category if we believe the company will use that flexibility to fund a strategic acquisition, cash distribution to shareholders, spin-off or other leveraging transaction. Conversely, a company's credit rating may be better able to withstand a moderate leveraging event if management places a high priority on returning credit metrics to pre-transaction levels and has consistently demonstrated the commitment to do so through prior actions.

Financial Policy – How We Assess It For The Scorecard

We assess the issuer's desired capital structure or targeted credit profile, history of prior actions, and adherence to its commitments. Attention is paid to management's operating performance and use of cash flow through different phases of economic cycles. Also of interest is the way in which management responds to key events, such as changes in the credit markets and liquidity environment, legal actions, competitive challenges, and regulatory pressures.

Management's appetite for M&A activity is assessed with a focus on the type of transactions (i.e. core competency or new business) and funding decisions. Frequency and materiality of acquisitions and previous financing choices are evaluated. A history of debt-financed or credit-transforming acquisitions will generally result in a lower score for this factor.

We also consider a company and its owners' past record of balancing shareholder returns and debt holders' interests. A track record of favoring shareholder returns at the expense of debt holders is likely to be viewed negatively in scoring this factor.

Factor 5: Financial Policy (20%)

	Sub-Factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Financial Policy	20%	Expected to have extremely conservative financial policies; very stable metrics; public commitment to very strong credit profile over the long term	Expected to have very stable and conservative financial policies; stable metrics; minimal event risk that would cause a rating transition; public commitment to strong credit profile over the long term	Expected to have predictable financial policies that preserve creditor interests. Although modest event risk exists, the effect on leverage is likely to be small and temporary; strong commitment to a solid credit profile	Expected to have financial policies that balance the interest of creditors and shareholders; some risk that debt funded acquisitions or shareholder distributions could lead to a weaker credit profile	Expected to have financial policies that tend to favor shareholders over creditors; above average financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes	Expected to have financial policies that favor shareholders over creditors; high financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes	Expected to have financial policies that create elevated risk of debt restructuring in varied economic environments	Expected to have financial policies that create elevated risk of debt restructuring even in healthy economic environments

Assumptions, Limitations and Rating Considerations That Are Not Covered in the Scorecard

The scorecard in this rating methodology represents a decision to favor simplicity that enhances transparency and to avoid greater complexity that would enable the scorecard to map more closely to actual ratings. Accordingly, the five rating factors in the scorecard do not constitute an exhaustive treatment of all of the considerations that are important for ratings of companies in the software sector. In addition, our ratings incorporate expectations for future performance, while the financial information that is used for mapping in the scorecard is mainly historical. In some cases, our expectations for future performance may be informed by confidential information that we cannot disclose. In other cases, we estimate future results based upon past performance, industry trends, competitor actions or other factors. In either case, predicting the future is subject to the risk of substantial inaccuracy.

Assumptions that may cause our forward-looking expectations to be incorrect include unanticipated changes in any of the following factors: the macroeconomic environment and general financial market conditions, industry competition, new technology, regulatory and legal actions.

Key rating assumptions that apply in this sector include our view that sovereign credit risk is strongly correlated with that of other domestic issuers, that legal priority of claim affects average recovery on different classes of debt sufficiently to generally warrant differences in ratings for different debt classes of the same issuer, and the assumption that access to liquidity is a strong driver of credit risk.

In choosing metrics for this rating methodology scorecard, we did not explicitly include certain important factors that are common to all companies in any industry such as the quality and experience of management, assessments of corporate governance and the quality of financial reporting and information disclosure. Ranking these factors by rating category in a scorecard would in some cases suggest too much precision in the relative ranking of particular issuers against all other issuers that are rated in various industry sectors.

Ratings may include additional factors that are difficult to quantify or that have a meaningful effect in differentiating credit quality only in some cases, but not all. Such factors include financial controls, exposure to uncertain licensing regimes and possible government interference in some countries. Regulatory, litigation, liquidity, technology and reputational risk as well as changes to consumer and business spending patterns, competitor strategies and macroeconomic trends also affect ratings. While these are important considerations, it is not possible to precisely express these in the rating methodology scorecard without making the scorecard excessively complex and significantly less transparent. Ratings may also reflect circumstances in which the weighting of a particular factor will be substantially different from the weighting suggested by the scorecard. Factor 5 on Financial Policy is an example. In some instances, a company's approach is sufficiently extreme with regard to matters such as proclivity towards debt financed acquisitions that the rating effect will be greater than what is suggested by the 20% weighting in the scorecard.

This variation in weighting rating considerations can also apply to factors that we choose not to represent in the scorecard. For example, liquidity is a consideration frequently critical to ratings and which may not, in other circumstances, have a substantial impact in discriminating between two issuers with a similar credit profile. As an example of the limitations, ratings can be heavily affected by extremely weak liquidity that magnifies default risk. However, two identical companies might be rated the same if their only differentiating feature is that one has a good liquidity position while the other has an extremely good liquidity position, unless these are very low rated companies for which liquidity can play an outsized role in avoiding default.

Other Rating Considerations

Ratings encompass a number of additional considerations. These include but are not limited to: our assessment of the quality of management, corporate governance, financial controls, liquidity management, and event risk.

Management Strategy

The quality of management is an important factor supporting a company's credit strength. Assessing the execution of business plans over time can be helpful in assessing management's business strategies, policies, and philosophies, and evaluates management performance relative to performance of competitors and our projections.

A record of consistency provides us with insight into management's likely future performance in stressed situations and can be an indicator of management's tendency to depart significantly from its stated plans and guidelines.

Corporate Governance

Among the areas of focus in corporate governance are audit committee financial expertise, the incentives created by executive compensation packages, related party transactions, interactions with outside auditors, and ownership structure.

Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. The quality of financial statements may be influenced by internal controls, including centralized operations and the proper tone at the top and consistency in accounting policies and procedures. Auditors' comments in financial reports and unusual financial statement restatements or delays in regulatory filings may indicate weaknesses in internal controls.

Excess Cash Balances

Some companies in this sector maintain cash balances (meaning liquid short-term investments as well as cash) that are far in excess of their operating needs. In many cases, the primary motivation for holding large cash balances is to minimize tax payments. Many US companies have funded share repurchases with debt while simultaneously building cash holdings that are offshore for tax purposes. Given shareholder pressures to return excess cash holdings, elimination of the tax motivation would result in a large portion of offshore cash being used for dividends and share repurchases. However, there would be significant variation in company behavior based on differences in financial philosophy, investment opportunities, and shareholder pressures. A few companies maintain excess cash holdings for long periods of time in excess of their liquidity needs solely due to conservative financial policies, which provides a stronger indication for an enduring approach that will benefit creditors. Even when the eventual use for excess cash is likely to be for purposes that do not benefit debt holders, large holdings provide some beneficial cushion against credit deterioration. Such downside protection is more important for low rated companies than for highly rated companies due to differences in credit stability and distance from default.

While the scorecard in this methodology uses Debt/EBITDA and FCF/Debt ratios with gross debt rather than net debt, we do consider excess cash holdings in our rating analysis. Generally, this is done on a qualitative basis. The degree to which excess cash supports a stronger credit profile depends on our view of how this is most likely to be used. For example, expected investment in cash generating assets or debt reduction would be favorable for credit quality relative to dividends and share repurchases. While we consider excess cash in our credit assessment for ratings, we do not typically adjust the balance sheet debt for any specific amount because this implies greater precision than we think is appropriate for the uncertain future uses of cash. However, when cash holdings are unusually large relative to debt we may refer to debt net of cash, or net of a portion of cash, in our credit analysis and research in order to provide additional insight into our qualitative assessment of the credit benefit.

Liquidity Management

Liquidity is an important rating consideration for all software companies. Liquidity can be particularly important for non-investment grade software companies where issuers typically have less operating and financial flexibility. We form an opinion on likely near-term liquidity requirements from both sources and uses of cash.

Event Risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in an issuer's fundamental creditworthiness. Typical special events include mergers and acquisitions, asset sales, spin-offs, capital restructuring programs, litigation and shareholder distributions.

Appendix A: Software Methodology Factor Scorecard

Factor 1: Business Profile (25%)									
	Sub-Factor Weight	**Aaa**	**Aa**	**A**	**Baa**	**Ba**	**B**	**Caa**	**Ca**
Product Line Diversity	5%	Operates in all 3 Primary industry segments with a broad portfolio in each	Operates in all 3 Primary segments, with a broad portfolio in 2 and a limited portfolio in 1	Operates in all 3 Primary segments, with 1 broad and 2 limited or, Operates in 2 Primary segments with a broad portfolio in each	Operates in 2 Primary segments with a broad portfolio in 1 and limited in the other	Operates in 2 Primary segments with a limited portfolio in each or Operates in 1 Primary segment with a broad portfolio in that segment	Operates in 1 Primary segment with a limited portfolio within that segment	Very limited portfolio of products	One product company
Geographic Diversity	5%	Globally extremely well diversified with significant presence in all regions and minimal concentration in any one region; no single region expected to account for more than 30% of revenues	Globally well diversified; no single region expected to account for more than 35 % of revenue; no two regions expected to be more than 65% of revenue	Globally diversified; no single region expected to account for more than 45 % of revenue; no two regions expected to be more than 65% of revenue	Main region expected to account for approximately 45 - 55 % of revenue or less than 45% but the two largest regions account for no more than 75% of revenue	Main region expected to account for approximately 55 - 65 % of revenue	Main region expected to account for approximately 65 - 80 % of revenue	Main region expected to account for 80 % or greater of revenue	One small region or country expected to account for over 80% of revenue
End-Market Diversity	5%	Extremely well diversified with largest market expected to be no more than 5% of sales	Very well-diversified end markets with very limited concentration expected in any end market	Well-diversified end markets with minimal concentration expected in any end market	Diversified end markets but with modest concentration expected in one or more end markets	Concentration in one or more end markets but no single market expected to generate half of sales	Limited diversification with largest end market expected to generate more than half of sales	Very limited diversification with largest end market expected to generate more than two thirds of sales	Expected to have one narrow end market only
Market Share	10%	Expected to be #1 in all key market segments with greater than 50% market share in majority of segments	Expected to have #1 or #2 market share in all key markets	Expected to be #1 or 2 in majority of key markets	Expected to be among top 3 in majority of key markets	Expected to be a strong niche player in majority of markets	Expected to be strong local or strong but small niche player in majority of markets	Expected to be small local player or very small niche player	Not expected to have niche of any significance
Factor 2: Scale (15%)									
Revenue (USD Billion)	10%	≥$60	$30 - 60	$15 - 30	$3 - 15	$0.75 - 3	$0.25 - 0.75	$0.1 - 0.25	< $0.1
Free Cash Flow (USD Billion)	5%	≥$12.5	$7.5 - 12.5	$3.75 - 7.5	$0.75 - 3.75	$0.1875 - 0.75	$0.0625 - 0.1875	$0 - $0.0625	< $0

	Sub-Factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Factor 3: Profitability (10%)									
Operating Income ROA (Net of Cash + Marketable Securities)	10%	≥30%	25 - 30%	20 - 25%	15 - 20%	10 - 15%	5 - 10%	0 - 5%	< 0%
Factor 4: Leverage and Coverage (30%)									
Debt/EBITDA	10%	< 0.5x	0.5 - 1x	1 - 1.5x	1.5 - 2.5x	2.5 - 4x	4 - 6.5x	6.5 - 9x	≥9x
(EBITDA-CapEx)/ Interest Expense	5%	≥22x	16 - 22x	9 - 16x	4.5 - 9x	2.5 - 4.5x	1.25 - 2.5x	0.25 - 1.25x	< 0.25x
FCF/Debt	10%	≥75%	50 - 75%	35 - 50%	20 - 35%	12.5 - 20%	5 – 12.5%	0 - 5%	< 0%
(Cash + Marketable Securities) / Debt	5%	≥175%	125 - 175%	75 - 125%	35 - 75%	20 - 35%	7.5 - 20%	2.5 - 7.5 %	< 2.5%
Factor 5: Financial Policy (20%)									
Financial Policy	20%	Expected to have extremely conservative financial policies; very stable metrics; public commitment to very strong credit profile over the long term	Expected to have very stable and conservative financial policies; stable metrics; minimal event risk that would cause a rating transition; public commitment to strong credit profile over the long term	Expected to have predictable financial policies that preserve creditor interests. Although modest event risk exists, the effect on leverage is likely to be small and temporary; strong commitment to a solid credit profile	Expected to have financial policies that balance the interest of creditors and shareholders; some risk that debt funded acquisitions or shareholder distributions could lead to a weaker credit profile	Expected to have financial policies that tend to favor shareholders over creditors; above average financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes	Expected to have financial policies that favor shareholders over creditors; high financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes	Expected to have financial policies that create elevated risk of debt restructuring in varied economic environments;	Expected to have financial policies that create elevated risk of debt restructuring even in healthy economic environments

Appendix B: Overview of the Software Industry

The software industry includes a very large, diverse universe of companies with software technologies and applications that serve numerous functions and industry verticals. The industry is continuously evolving with some segments growing faster than others. The more successful companies have typically achieved a meaningful market position within a specific end-market or product market that is defensible in the near-to-midterm. This product positioning is sometimes defined by a technological capability (such as for database, middleware, or operating system segments of the infrastructure market) or the ease-of-use and customizable aspects of an application product for a specific industry vertical (such as ERP systems designed for the education end-market). Demand for hosted versions of software has grown creating opportunities for new entrants and forcing legacy players to quickly adapt or acquire their own hosted offerings.

For technology driven software firms, the growth of the firm can be driven by the underlying characteristics of the technical landscape with which it is aligned. For example, data management software for the mainframe industry is dependent on the ongoing success of mainframe technology. In other cases, the ability to deliver superior or more reliable performance is a driving factor such as a faster database or a more efficient operating system. Stability of firms competing in these markets is driven over the near term by the ongoing maintenance and support requirements of the software as well as high switching costs (complexity and time commitment) which deter replacement.

Over the long term, the stability of firms is driven by their ability to innovate, acquire or develop desirable next-generation software technology.

For application driven software firms, the company's product position is often achieved by catering to a specific industry vertical ahead of the competition and then nurturing the end-market relationship through continued product development and strong customer support. These firms often possess a first-mover advantage and a deep end-market knowledge base that yields customer retention rates often exceeding 90%. This also means that it can be very difficult to acquire new customers through competitive displacement and in most cases they are reliant upon selling new products and functionality into their existing customer base to achieve organic growth.

Although some firms have a robust new product development capability, many application focused software companies are reliant on acquisitions. These acquisitions serve the purpose of building out product portfolios as well as bringing in new customers to cross-sell the pre-acquisition portfolio. Additionally, as issuers become more pervasive within their customers' IT systems, the ability to displace becomes that much more difficult.

Appendix C: Some Considerations for the Pro Forma Assessment of Acquisitive Software Companies

The overwhelming majority of software companies are typically acquisitive, have gone through a merger or leveraged buyout, or all of the above. This trend is expected to continue as the industry consolidates and the private equity industry continues to find attractive acquisition candidates. The companies that issue debt are often formed through consolidation of two or more software companies, a roll-up of several companies, a spin-off from another even larger company or a leveraged buy-out. Historical financial statements of these companies often do not reflect the on-going credit profile of the business. As part of developing the go-forward view of the business, it can be helpful to assemble a run-rate perspective of historic results which reflects the impact of recent or pending acquisitions and resulting changes to the business(es).

Creating a Run-Rate View of the Business

Our ratings are based on a forward looking view of an issuer. To assist in building a forward view of an acquisitive software company, we often develop a pro forma run-rate picture of the business and capital structure reflecting the impact of an acquisition(s) or financial structure changes on historic results. The largest impact of financial structure changes is typically on companies that are going through or have recently gone through a leveraged buyout.

Some Key Issues in Developing Forward Views of Software Companies

Purchase accounting write-downs – Upon acquisition of a software company, the accounting standards require a significant portion of deferred revenue to be written off. Deferred revenue typically arises when a software company receives one year's (for example) worth of maintenance, support or subscription revenue but can only recognize the revenue as it is "earned" over the year (or multiple years in certain cases). As a large portion of a software company's revenues are booked as deferred revenue and recognized over time, the write-down at close of an acquisition can dramatically reduce post-closing revenues and EBITDA and thus give an incomplete picture of the business. It often makes sense to look at results as if deferred revenue had not been written off but amortized in the traditional manner. The amount of written off revenues is not typically part of GAAP statements post-closing, although it is often included in loan agreement covenant compliance reports. Public filers will occasionally present non-GAAP financials which break out the written off revenue or present a run rate view of revenues.

Results of acquired companies pre-closing – We often consider results (i.e. revenue, EBITDA and free cash flow) of acquired companies for the pre-closing period to get a run rate picture of the combined businesses. Acquired companies may themselves have been acquisitive requiring further information.

Transaction and Restructuring costs – Transaction related expenses can muddy the view of the ongoing underlying economics of the business. Consequently, the costs related to making an acquisition, (typically legal, accounting, debt issuance and M&A fees as well as severance costs) may be evaluated when developing a run rate picture of the business. For certain companies that we view as serial acquirers, we may view those costs as ongoing expenses of their strategy.

Proposed Cost Savings – Cost savings from combining software companies or taking a public company private can materially impact the future profile of the business. We often look at a range of proposed cost savings in evaluating a run-rate and forward view of a software company. We assess the cost savings to determine how much or what range, if any, of the savings makes sense on a go-forward basis. Costs that can be eliminated at closing (or a reasonable period thereafter) typically have a higher likelihood of being considered in our evaluation. We also form a view on how permanent the reductions are likely to be and whether they will have a detrimental impact on our forward view of the business.

Completed Cost Cuts – Once cost cuts have been made, we often evaluate the run rate as if the cost reductions had been completed at the beginning of the period. Our forward view will consider whether we expect the costs to continue or if they will have a negative impact on the business.

Capital Structure Changes – In building a forward view of the business, we may evaluate historical results as if capital structure changes had occurred at the beginning of the LTM period. In cases of a proposed transaction, we may evaluate debt levels pro forma for the transaction, including interest expense as if the transaction had taken place one year prior.

We highlight several of the above considerations in the example below, which illustrates how we might look at GAAP vs run rate measures for a company that went through a leveraged buyout, was required to write down a substantial proportion of deferred revenue at closing, and eliminated approximately $40 million of expenses at closing. The presentation shown is a simplified general example. In practice, our analysis will consider many issuer-specific considerations, including but not limited to, the materiality (for credit assessment) of adjustments that could be made to estimate future performance, and our level of confidence in information that could be used to inform estimates for pro forma analysis.

XYZ Software Corp. – Estimating Pro Forma Performance from Reported Results under GAAP or IFRS

XYZ Software Corp was acquired in a leveraged buyout. Post-closing 2H financials include all transaction and restructuring costs and have been impacted by the write-down of deferred revenue at closing. In this example, the company provided supporting detail on the purchase accounting adjustments, headcount reductions and transaction expenses but not detail on the actual cash outlay and timing of the restructuring actions. The last two columns, Pro Forma and GAAP , highlight the significant impact of purchase accounting adjustments and transaction expenses on the calculation of LTM 12/31 results.

XYZ Software Corp.	
Purchase Price	3,600
Total Debt	**2,500**
Closing Costs - Expensed at closing	126
Restructuring Costs	**25**
Run Rate Full Year Cost Savings achieved in month 1	40
Estimated Full Year Pro Forma Interest Expense	**175**

Summary GAAP vs Estimated Pro Forma View	1H GAAP	Adjustments	1H Pro Forma	2H GAAP	Adjustments	2H Pro Forma	GAAP	Pro Forma
Revenue	650.0	0.0	650.0	392.6	257.4	650.0	1042.6	1300.0
EBITDA	**180.0**	**17.5**	**197.5**	**(210.9)**	**408.4**	**197.5**	**(30.9)**	**395.0**
FCF	155.0	(87.5)	67.5	(71.0)	136.0	65.0	84.0	132.5
Interest	**0.0**	**(87.5)**	**(87.5)**	**(87.5)**	**0.0**	**(87.5)**	**(87.5)**	**(175.0)**

Revenue Considerations - GAAP revenue is particularly impacted post-closing by the write-down of deferred revenues at closing. In this example, GAAP revenues were $650 in the 1H but only $393 in 2H. If the written off deferred revenue ($257) had been recognized in 2H, pro forma revenue would have been $650 in 2H, the same as GAAP 1H (for illustrative purposes, 2H revenue is equal to 1H revenue).

Example: Estimate of Run Rate Revenue	
1H GAAP Revenue	650.0
2H GAAP Revenue	392.6
Purchase Acctg Write-down (Def'd Rev not recognized)	257.4
Estimated Pro Forma 2H Revenue	650.0
Total GAAP Revenue	1042.6
Purchase Acctg Write-down (Def'd Rev not recognized)	257.4
Estimated Pro Forma Revenue	1300.0

EBITDA Considerations - In this example, both 2H GAAP free cash flow and EBITDA are also dramatically impacted by the acquisition. To better reflect the run rate EBITDA of the business (and assist in projecting future performance), we look at transaction expenses and restructuring charges that flowed through the income statement and purchase accounting adjustments (deferred revenue that would have been recognized in 2H) to estimate a pro forma 2H EBITDA.

1H was not impacted by these charges. However, the company did eliminate $40 in annual costs (headcount reductions and elimination of certain public company costs) immediately after closing, offset by the introduction of an annual $5 million management fee by the private equity sponsor. Thus, 1H EBITDA would have been $17.5 higher had the transaction taken place at the beginning of the year ($20 million half year expense reduction net of $2.5 half year sponsor management fee). Evaluation of these annual savings is highly subjective, and we may choose to include all the savings, partial or none depending on our level of comfort with the cost reductions and their impact on the business.

Example: Estimate of Run Rate EBITDA	
Pre Closing 1H GAAP EBITDA	180.0
Pro Forma Cost Savings 1H	20.0
Pro Forma 1H PE Mgmt Fees	(2.5)
Estimated Pro Forma 1H EBITDA	**197.5**
2H GAAP EBITDA	(210.9)
GAAP Transaction Expenses (Expensed)	126.0
GAAP Restructuring Charges (Expensed)	25.0
Purchase Acctg Write-down (Def'd Rev not recognized)	257.4
Estimated Pro forma 2H EBITDA	**197.5**
GAAP based EBITDA	(30.9)
Total Adjustments to EBITDA	425.9
Estimated Pro Forma EBITDA	**395.0**

Free Cash Flow Considerations - Free cash flow is dramatically impacted in this example by transaction expenses at closing and shortly thereafter, expenses that are not representative of how the company will perform going forward. Estimating the impact of these expenses can be challenging, however, as there is typically limited information available on the timing of cash outlays and how they impact free cash flow.

Run rate pro forma free cash flow can be estimated by looking at the closing expenses and restructuring payments that flowed through the cash from operations line. However, the breakdown of the actual cash payments is not often provided (GAAP charges often do not reflect when the cash was paid). In cases where we do not have sufficient information, we often look at a range of cash costs for the period and evaluate a range of pro forma free cash flow. We reduced pre-closing 1H free cash flow in this example to reflect interest expense as if the transaction had taken place at the beginning of the year (while this interest may have provided a tax shield and reduced tax payments during the period, this level of detail is not often available).

Example: Estimated Run Rate FCF	
Pre Closing 1H FCF	155.0
Run Rate Cash Cost Savings (2)	0.0
Pro Forma 1H PE Mgmt Fees	(2.5)
Pro Forma Interest 1H	(87.5)
Estimated Pro Forma 1H FCF	**65.0**
2H actual FCF	(71.0)
Cash Transaction Costs	126.0
Cash Restructuring Costs (1)	10.0
Estimated Pro forma 2H FCF	**65.0**
GAAP FCF	84.0
Total Adjustments to FCF	46.0
Estimated Pro Forma FCF	**130.0**

(1) Only $10 million of restructuring charges were paid in cash in 2H, the remainder paid in the following year

(2) While head count was significantly reduced, insufficient data was available on actual cash amounts

GAAP vs Pro Forma Metrics - As detailed below, pro forma metrics can vary significantly from GAAP based results.

GAAP Based Measures	
Revenue	1042.6
FCF	84.0
Debt/LTM EBITDA	-80.9x
EBITDA-Capex/Interest	-0.7x
FCF/Debt	3.4%
Cash/Debt	2.8%
ROA (Op Inc/Avg Assets net of cash)	1.6%

Estimated Pro Forma Measures	
Pro Forma Revenue	1300.0
Pro Forma FCF	130.0
Pro Forma Debt/EBITDA	6.3x
Pro Forma EBITDA-Capex/Interest	2.1x
Pro Forma FCF/Debt	5.2%
Pro Forma Cash/Debt	2.8%
Pro Forma ROA (Op Inc/Avg Assets net of cash)	2.7%

In this example, leverage (debt to LTM EBITDA) is 6.3x on a pro forma basis which is much more reflective of the run rate profile of the company than the GAAP based result. Likewise, free cash flow to debt is approximately 5.2% and also more reflective of the run rate of the business than the GAAP based result.

The write-down of deferred revenues typically affects GAAP results for the first full year after the transaction closes and in some cases the impact can last two or more years though at much diminished levels. As a result, LTM pro forma adjustments often continue well into the second year after a transaction closes.

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