

clients on this journey. We brought additional new innovations to the market in 2019 including: the financial services public cloud, z15 and high-end storage and we have a leadership position in quantum computing. With these innovations, we built momentum for growth in 2020.

At the time of our fourth-quarter earnings report, analysts' estimates of our revenue growth were approximately 3 percent for 2020, which we stated was reasonable. This includes about a 1 point impact from businesses divested in 2019, and January 17, 2020 expectations for currency translation. This also includes an expectation of an improving trend in GTS, predominantly in the second half of 2020. We also expect to expand GAAP and operating (non-GAAP) gross margins and pre-tax income will include impacts from significant structural actions in 2020, primarily in our GTS business as we shift toward a more asset-based model to create a more competitive, flexible structure.

At constant currency, we expect accelerated growth of about 0.5 points from the fourth-quarter 2019 revenue growth rates to first-quarter 2020. At January 17, 2020 spot rates, we expect currency to be a headwind to first-quarter revenue growth of about 1.0 to 1.5 points, as compared to a headwind of 0.6 points in the fourth quarter of 2019.

Consistent with the acquisition of a highly profitable software business, non-cash purchase accounting adjustments resulted in the Red Hat acquisition being dilutive to full-year 2019 earnings per share. In an acquisition, U.S. GAAP requires a company to record all assets acquired and liabilities assumed at the acquisition date fair value. This includes the acquired deferred revenue balance. This resulted in a non-cash adjustment of \$2.2 billion to the acquired deferred revenue balance and resulted in a reduction to reported revenue post-closing. The level of adjustment reflects the high margin profile of Red Hat's subscription-based business. While there will be continued impact in 2020 from the deferred revenue adjustment from the Red Hat purchase accounting, it will largely be in the first half and lessen throughout the year.

Overall, we expect GAAP earnings per share from continuing operations for 2020 to be at least \$10.57. Excluding acquisition-related charges of \$1.70 per share, non-operating retirement-related items of \$1.02 per share and tax reform enactment impacts of \$0.06 per share, operating (non-GAAP) earnings per share is expected to be at least \$13.35. For the first quarter of 2020, we expect GAAP earnings per share from continuing operations to be 12 to 13 percent of the full-year expectation and operating (non-GAAP) earnings per share to be approximately 14 to 15 percent of the respective full-year expectation. This reflects typical seasonality of IBM's operations, and the impact of the Red Hat deferred revenue purchase accounting adjustment.

We expect free cash flow to be approximately \$12.5 billion in 2020. This includes contribution from Red Hat combined with incremental software and services synergy profits and net of incremental interest to finance the transaction and other acquisition-related charges. Free cash flow expectations reflect expected operational profit performance, partially offset by headwinds in capital expenditures and cash tax.

For full-year 2020, we expect the GAAP effective tax rate to be approximately 3 to 6 percent, including an estimate for potential discrete tax events (discretes). We expect the operating (non-GAAP) tax rate for 2020 to be approximately 7 to 9 percent, including an estimate of potential discretes. We expect a discrete tax benefit in the first quarter of 2020. Together with the expected structural actions described above, we anticipate that these two items will be approximately neutral to the first-quarter and full-year 2020 earnings per share. Discretes by their nature are difficult to estimate and the actual impacts will be recorded as the discrete events occur. The rates will change year to year based on discrete tax events, such as the settlement of income tax audits and changes in tax laws, as well as recurring factors including the geographic mix of income before taxes, state and local taxes and the effects of various global income tax strategies. The GAAP effective tax rate could also be affected by adjustments to the previously recorded charges for U.S. tax reform attributable to any changes in law, new regulations and guidance, audit adjustments, among others.

The Red Hat acquisition was funded through a combination of cash and debt, with the incremental debt issued in the first half of 2019. We will continue with a disciplined financial policy and are committed to maintaining strong investment-grade credit ratings. Since the end of the second quarter of 2019, we reduced our debt balance by \$10.1 billion. We are continuing to target a leverage profile consistent with a mid to high single A credit rating within a couple years, while maintaining our solid and growing dividend. We suspended our share repurchase program at the close of the acquisition to direct our free cash flow towards reducing debt levels. The combination of these actions provides us with the flexibility to invest in the business going forward.

Beginning in the second quarter of 2019 and continuing throughout the year, IBM's Global Financing business wound down the portion of its commercial financing operations which provides short-term working capital solutions for OEM information technology suppliers, distributors and resellers. This was consistent with our capital allocation strategy and high-value focus. IBM Global Financing will continue to provide differentiated end-to-end financing solutions, including commercial financing in support of IBM partner relationships.

We expect 2020 pre-tax retirement-related plan cost to be approximately \$2.7 billion, an increase of approximately \$600 million compared to 2019. This estimate reflects current pension plan assumptions at December 31, 2019. Within total retirement-related plan cost, operating retirement-related plan cost is expected to be approximately \$1.5 billion, approximately flat versus 2019. Non-operating retirement-related plan cost is expected to be approximately \$1.2 billion, an increase of approximately \$600 million compared to 2019, primarily driven by lower income from expected return on assets. Contributions for all retirement-related plans are expected to be approximately \$2.3 billion in 2020, an increase of approximately \$100 million compared to 2019.

Liquidity and Capital Resources

The company has consistently generated strong cash flow from operations, providing a source of funds ranging between \$14.8 billion and \$16.7 billion per year over the past three years. The company provides for additional liquidity through several sources: maintaining an adequate cash balance, access to