International Business Machines Corp.

"View from the Top" call with CEO Arvind Krishna (transcript included); PO to $220

Reiterate Rating: BUY | PO: 220.00 USD | Price: 197.78 USD

14 March 2024

Equity

Key Changes

(US$)	Previous	Current
Price Obj.	200.00	220.00

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IBM repositioned for sustained growth and improving FCF

As part of our 'View from the Top' series, we hosted an investor call with IBM CEO, Arvind Krishna. Portfolio optimization remains a key focus for the company with ~75% of the company now sitting in Software & Consulting. Cumulative cash flows of $19bn+ (CY24-26) post dividends (plus ability to borrow) allows for continued focus on M&A ($1-10bn range most likely) with free cash flow accretion over two years. M&A should continue to drive incremental growth in revs and FCF over time. Over the last 4 years (Krishna's time as CEO), IBM has made 39 acquisitions with most of them in software but some in consulting. We reiterate our Buy rating on IBM as the turnaround at IBM (rev growth and FCF improvement) continues, with a defensive portfolio, attractive dividend yield and underappreciated AI capabilities.

AI potential similar to Internet; 2H24 deployments pick up

CEO Krishna noted third party estimates that AI has the potential to unleash $4trillion in productivity through 2030. App programmers could see an increase in productivity as much as 30%. IBM's watsonx AI can write code for programmers and the company has found that 85% of the time, the code is accepted by the programmer on the first attempt. Adding watsonx to IBM's HR has created a 40% increase in productivity. IBM has seen 70% of contact center cases resolved by conversational AI. AI is already several $100mn book of business and growing (2/3rd in Consulting and 1/3rd in Software).

Remains confident in growth trajectory

CEO Krishna remains confident on achieving guidance targets set at last earnings. RHT should growth ~10% in 2024 (acceleration in product uptake, strong bookings backdrop). Transaction Processing should grow slightly (pricing, installed base of mainframe capacity). Consulting has significant room to run given partnerships with Hyperscalers and other large partners have strong ~$1bn+ pipelines.

Raising PO to $220 (from $200)

We leave estimates unchanged but raise our PO to $220 (from $200) on 18x (was 17x) EV/F25E FCF. We use a higher multiple to reflect the potential for continued growth in rev and increased confidence in FCF growth over the next several years.

Estimates (Dec) (US$)	2022A	2023A	2024E	2025E	2026E
EPS	9.13	9.62	10.00	10.47	11.18
GAAP EPS	1.94	8.14	8.89	9.40	10.12
EPS Change (YoY)	15.1%	5.4%	4.0%	4.7%	6.8%
Consensus EPS (Bloomberg)			10.07	10.58	11.37
DPS	6.86	7.26	7.66	8.06	8.46
Valuation (Dec)					
P/E	21.7x	20.6x	19.8x	18.9x	17.7x
GAAP P/E	101.9x	24.3x	22.2x	21.0x	19.5x
Dividend Yield	3.5%	3.7%	3.9%	4.1%	4.3%
EV / EBITDA*	15.8x	15.1x	14.9x	14.8x	14.4x
Free Cash Flow Yield*	4.7%	6.9%	6.6%	7.2%	7.7%

* For full definitions of *iQmethod*SM measures, see page 18.

Stock Data

Price	197.78 USD
Price Objective	220.00 USD
Date Established	14-Mar-2024
Investment Opinion	B-1-7
52-Week Range	120.55 USD - 199.18 USD
Mrkt Val (mn) / Shares Out (mn)	181,314 USD / 916.7
Free Float	99.9%
Average Daily Value (mn)	961.47 USD
BofA Ticker / Exchange	IBM / NYS
Bloomberg / Reuters	IBM US / IBM.N
ROE (2024E)	43.1%
Net Dbt to Eqty (Dec-2023A)	192.9%
ESGMeter™	High

ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of BofA Global Research's equity investment rating, volatility risk rating, income rating, and price objective for that company. For full details, refer to "BofA ESGMeter Methodology".

Refer to important disclosures on page 19 to 21. Analyst Certification on page 17. Price Objective Basis/Risk on page 17. **12670243**

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iQprofile℠ International Business Machines Corp.

iQ**method* ℠ **– Bus Performance

(US$ Millions)	2022A	2023A	2024E	2025E	2026E
Return on Capital Employed	8.2%	9.1%	9.6%	10.2%	10.5%
Return on Equity	40.8%	39.9%	43.1%	42.2%	36.2%
Operating Margin	16.4%	17.9%	18.4%	19.0%	19.2%
Free Cash Flow	8,574	12,442	11,916	13,052	13,999

iQ**method* ℠ **– Quality of Earnings

(US$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash Realization Ratio	1.3x	1.6x	1.5x	1.6x	1.6x
Asset Replacement Ratio	0.4x	0.3x	0.5x	0.8x	0.9x
Tax Rate	15.2%	14.0%	14.0%	16.0%	16.0%
Net Debt-to-Equity Ratio	195.8%	192.9%	182.3%	116.4%	70.0%
Interest Cover	8.2x	6.9x	9.0x	10.5x	12.1x

Income Statement Data (Dec)

(US$ Millions)	2022A	2023A	2024E	2025E	2026E
Sales	60,529	61,861	63,679	66,213	69,930
% Change	5.5%	2.2%	2.9%	4.0%	5.6%
Gross Profit	33,369	34,932	35,160	37,103	39,296
% Change	3.6%	4.7%	0.7%	5.5%	5.9%
EBITDA	14,739	15,445	15,630	15,708	16,166
% Change	-2.8%	4.8%	1.2%	0.5%	2.9%
Net Interest & Other Income	(116)	(741)	(947)	(901)	(805)
Net Income (Adjusted)	**8,326**	**8,870**	**9,262**	**9,799**	**10,574**
% Change	**16.0%**	**6.5%**	**4.4%**	**5.8%**	**7.9%**

Free Cash Flow Data (Dec)

(US$ Millions)	2022A	2023A	2024E	2025E	2026E
Net Income from Cont Operations (GAAP)	1,773	7,508	8,237	8,797	9,572
Depreciation & Amortization	4,802	4,393	3,913	3,142	2,774
Change in Working Capital	(2,887)	900	536	2,160	2,817
Deferred Taxation Charge	0	0	0	0	0
Other Adjustments, Net	6,747	1,130	1,333	1,333	1,333
Capital Expenditure	(1,861)	(1,489)	(2,103)	(2,380)	(2,496)
Free Cash Flow	**8,574**	**12,442**	**11,916**	**13,052**	**13,999**
% Change	**-17.7%**	**45.1%**	**-4.2%**	**9.5%**	**7.3%**
Share / Issue Repurchase	0	0	1,329	1,359	1,389
Cost of Dividends Paid	(5,948)	(6,040)	(6,997)	(7,441)	(7,892)
Change in Debt	991	4,271	(4,000)	(4,000)	(4,000)

Balance Sheet Data (Dec)

(US$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash & Equivalents	7,989	13,089	15,337	18,307	21,802
Trade Receivables	15,148	14,647	14,329	13,776	13,194
Other Current Assets	5,981	5,171	6,376	6,539	6,820
Property, Plant & Equipment	5,334	5,501	431	404	1,036
Other Non-Current Assets	92,791	96,832	94,210	95,311	96,938
Total Assets	**127,243**	**135,240**	**130,683**	**134,337**	**139,791**
Short-Term Debt	4,760	6,426	6,426	6,426	6,426
Other Current Liabilities	26,745	27,695	28,608	29,668	31,141
Long-Term Debt	46,189	50,121	46,121	42,121	38,121
Other Non-Current Liabilities	27,528	28,384	29,114	30,132	31,625
Total Liabilities	**105,222**	**112,626**	**110,269**	**108,347**	**107,314**
Total Equity	**21,944**	**22,534**	**20,414**	**25,990**	**32,478**
Total Equity & Liabilities	**127,166**	**135,160**	**130,683**	**134,337**	**139,791**

* For full definitions of *iQmethod*℠ measures, see page 18.

Company Sector

IT Hardware

Company Description

International Business Machines (IBM) is a leading provider of enterprise solutions, offering a broad portfolio of IT hardware, business and IT services, and a full suite of software solutions. The company integrates its hardware products with its software and services offerings in order to provide high value solutions. IBM is comprised of four major segments: (1) Infrastructure, (2) Consulting, (3) Software, and (4) Financing.

Investment Rationale

We view IBM as a defensive investment given its high exposure to recurring sales, cost cutting levers, solid balance sheet, potential share gains, and relatively stable margins. We believe IBM will embark on further cost cutting, and enhance its services and software offerings through acquisitions. Longer term, we expect IBM to take share in IT spending with its Cloud and AI initiatives.

Stock Data

Average Daily Volume	4,861,315

Quarterly Earnings Estimates

	2023	2024
Q1	1.36A	1.63E
Q2	2.18A	2.36E
Q3	2.20A	2.37E
Q4	3.87A	3.63E

Transcript

Wamsi Mohan: Yes, thank you so much. Good afternoon. Good morning everyone. Thank you so much for joining us again on our View from the Top CEO Call Series. Before I get started, I need to mention that conflict disclosures relating to the individual companies of securities discussed on the call today can be found on the call invitation. I'm really honored to welcome back chairman and CEO of IBM, Arvind Krishna on this View from the Top series. This is his third appearance on the series, so we're especially grateful to have him come back and spend some time with us again.

Arvind really doesn't need any introduction. For all of you who've met him, he's just amongst one of the top leaders of our times in his career. He's seen so much of change and driven a lot of that change, whether it be AI, whether it's quantum computing, whether it's blockchain, and over the years really just significant amounts of contribution from a technological standpoint, but also bringing some of like the best innovations to IBM and driving those to commercialization. So really, really excited to speak about a very broad plethora of topics over here.

As you all know, since Arvind took over as CEO and even actually prior to that, he did the transformational deal with Red Hat, we saw the subsequent spinoff of Kyndryl. So there's been some huge portfolio transformations that Arvind has driven as well, and not last but least, but really if you think about the stock, the stock has had a phenomenal run. The total combined return, including dividends since the day Arvind took over as CEO is up 131% relative to the S&P of 119%. So some real strong outperformance relative to the S&P or a very, very difficult period of time with extremely tough challenges thrown everyone's ways. So Arvind, delighted to welcome you to this call today.

Arvind Krishna: Wamsi, it's always great to be with you and you are most generous and kind in your comments.

Wamsi Mohan: No, absolutely well deserved. I mean the stock price says it all. I have to say that's been a real change in trajectory. Well, I think one of the things that maybe investors have found it hard to appreciate externally is some of the significant changes that you have orchestrated at IBM. I think there are things that you have changed both from a portfolio perspective, which are maybe a little more obvious trend like externally, but also a lot of cultural change that you've driven at IBM. Would love to get your perspective on sort of what you inherited as CEO and what are some of the things that you have done to really change and turn this company around.

Arvind Krishna: Wamsi, thanks for that question. As you can imagine, I'm both very, very passionate and also incredibly excited by what we have been doing. So if you don't mind, maybe I'll break it into two separate parts. We first talk about portfolio and then talk about culture.

So on portfolio, really just to step back a little bit, the journey we are on is to position IBM in the areas with a lot of growth in the market. When I look at those, that's why the areas of focus where we will keep doing portfolio optimization is in software and in consulting. It's maybe hard to realize, but now 75% of the company is between those two areas. Now how did we get there? So we got there by, right at the beginning we announced the divestiture or spinout of Kyndryl. As Kyndryl while IBM's managed infrastructure services, I mean just to give people a sense, that was between $18 billion and $20 billion of revenue that we took out.

Now that freed up capital, that freed up go-to market. That allowed us to accelerate our growth rate. We have also done, I think if I remember right, 39 acquisitions over the last four years and that has helped. Most of them are in software with some in consulting and that's kind of the ratio that we're going to go on. We did do, I'll call it some fine tuning maybe the right word, because these are not that large. In software, we took some assets that are not germane to the core thesis, the core thesis being hybrid cloud and AI, and we decided that those were better outside the company. Watson Health and the Weather Company are two great examples of that.

So when we look at the portfolio, I'm really pleased with the fact that now three-fourths of the portfolio is positioned in much higher growth parts of the company. As a consequence, you're now seeing that growth. We talked about mid-single digit growth in late 2021. We sort of put out a three-year model and I would say yeah, every quarter may not be exactly perfect, but in aggregate we are right on our model or slightly better in the various parts of the business also. So that's maybe on the portfolio side.

Really when we talk about culture, I really have to step back and say that culture is probably as important as portfolio. I won't ever say more because without portfolio culture doesn't help, but without culture portfolio doesn't help if that's a fair way to put it. One, we decided to really kind of take out a zero risk mentality. I think just over decades people have sort of come into a zero risk mode, meaning we are going to take longer to get something built. We don't really want to put a bold proposition in front of a client.

So when you think about taking out a zero risk mentality, you got to really encourage people and yes, there is a certain amount of risk you don't want to take. I mean, let's be clear, but how do we - so I always look at our R&D teams and I say things like, give me your 70% chance of completing it, knowing full well that actually will have a little bit of buffer built into it, but not a massive, as opposed to saying. I want 100% that you must make a date, say 70, you'll normally get things six months or a year quicker than you would otherwise. Now once in a while will you miss it maybe, but if on average you're getting them that much ahead, that's a great way to do things.

A second example is all around how we partner and we really decided that we are going to partner well with everybody because that way you expand the pie and don't think of it as a - otherwise there's a cultural norm. Sometimes you think of win-lose, it's a fixed size pie. If we go with a partner, then I lose something. I say, no, no, no, that's not the way to think about it. Think about expanding the pie because when you're the partner of the client should have much reduced risk. They like the fact that two or more people are coming together, that increases your chances of winning. Well, if you increase your chances of winning all that friction that's there upfront goes away. So that's another great way of going about things.

And I'll make one final comment and then I'll pause on this question, Wamsi. As I walked around in my first three months, and when I say I walked around, unfortunately there wasn't all these offices because April of 2020 is when I came in and at the height of the pandemic, people didn't really want to see people in their offices that much. It wasn't zero but that much. But I talked to a lot of CIOs and CEOs. And one thing that struck me was how they said, we're not sure what you guys are great at. And what they meant by that was that we were willing to take on too much different kinds of work.

So that informed me, let's focus down. It really helped to inform our hybrid cloud and AI strategy because those were the issues and we leaned in a lot also in terms of expertise that we both hired as well as trained people inside. And I think that just sort of listen to the clients taking risk out, partnering really well, not the only, but really big cultural elements of what we are changing. And I would say that on that side, we're probably somewhere between a half to two-thirds done. I still think some of those returns are still in front of us.

Wamsi Mohan: Wow. Yeah, no, that's really interesting and I think it echoes a lot of what we've heard in the past of the old IBM of where you have a product portfolio and salespeople would show up to kind of be transactional in nature. Whereas what we hear today is IBM's a much more strategic partner that is involved at grassroots level of trying to improve the product portfolio from scratch. So I think it's definitely evident in conversations that we have as well. I don't think we could go.

Arvind Krishna: Wamsi, do you mind if I quantify that just a little bit.

Wamsi Mohan: That would be great.

Arvind Krishna: If I look at our total go-to-go market, only about 30% of the people are directly paid or what you're calling transactional selling. We really change the makeup of the field to be much more experiential and their purpose is to go into a client, do a client engineering project with the client or do a garage where they're implementing technology at the client. And kind of making it like that, that really allows the client to experience the innovation we are doing, but also what the client to know our sales teams are not paid only in getting a deal done. The majority of them are paid really on seeing success for the client and that's a big change and it's a really big change in kind of going from transactional to experiential but also much more technical and that is kind of the makeup of what we are doing on the field force.

Wamsi Mohan: No, that's super interesting color, thank you. You can't go really for very long without bringing up AI. And you mentioned your focus on hybrid cloud and AI. It's been the topic over the last year. What is your view on how revolutionary this is? Is this kind of how public cloud was, is it different? Is it like dot com and do you think of it more in terms of a revenue driver for companies or a cost play or just how do you think about the evolution of this?

Arvind Krishna: So let me unpack. I think you had three sub-questions in there, Wamsi. So first part, I am fundamentally convinced that this is a really big inflection point in technology. To give you a sense, if I look at the last 30 years when you say dot com, that got driven by the internet, clearly a massive change in how companies deploy technology and did business. Our cloud was the next one. I actually think of this in the same category as the internet and I had the fortune to be at Davos earlier this year and was one of the panelists at which the question was is generative AI equal to the steam engine in terms of the impact it's going to have on the global economy? And I definitely am one, but actually I think the whole panel agreed that that is the right analogy.

So if you think about it that way, that's a big, big impact. To quantify that the number I like, I think it was McKinsey who came up with this number. They said generative AI is going to create $4 trillion of productivity per year by 2030. So when you think about it in those terms, that's 4% to 5% of productivity in the global economy and there's very few things we can think of that create that much. So at a big macro level, I think we should think of it in the same way as we thought about the internet. Actually, I think it's probably more impactful than the mobile phone for sure.

Okay. So then you went into, all right, what about is it a cost saver, is it a revenue driver? Those are always coupled to be the same. The reason I say they're the same, if I can bring down the cost of providing a particular service that can open up a market for it, because when it's priced high, the market is small. If I can reduce the cost of how we provide a service, then suddenly it opens up a market and that becomes a revenue driver. DITTO, if I have more profit coming from taking cost out, that means there is more money to reinvest back in the company and that way we can drive more revenue.

So I don't think actually it's ever appropriate to look at those two as being different. One feeds the other is the way I would look at it and that's kind of how I think about it. When I think about our clients, I can reflect on a hotel chain that we just started a very large project with. What they want to do is actually improve revenue because they're looking at how can I improve how their associates provide service to their clients. There's another one where it's cost. They're looking at can I take costs out of procurement and if I do that, then can I begin to use that to do more marketing? So cost takeout resulting in a more marketing, resulting in more revenue. So that tends to go hand in hand. But I think for our audience, $4 trillion of annual productivity is going to get driven by deploying AI at scale in a number of different areas across the enterprise. And so that's how I would unpack that part of the question, Wamsi.

Wamsi Mohan: No thanks for that Arvind. And that's obviously a ginormous number. Any anecdotes that you can share around ROI or use cases using AI both inside IBM or perhaps more broadly outside at your customers?

Arvind Krishna: Absolutely. Love to do that. So I'm going to maybe break it into a few different use cases. If I was to just think about it, I think there's three use cases that really are easy to get to and I don't use that word lightly because we've all heard of all the issues that come around when you deploy AI scale, but I think these three, I think everybody should go after.

The first is around coding or programming. And I'll come back on a couple of very specific examples, Wamsi to sort of make an ROI there. A second is around customer service and customer experience. And the third is around digital labor, kind of all those enterprise operations that we need to run our companies, how do we go tackle those? So if I think about the first one programming, I think that we can easily get about 30% productivity on certain programmers.

On the last call I talked about one of our clients CITI that they went ahead late last year and they used one of our coding assistance using Watsonx, which is the product name that IBM is using for generative AI on a technology called Ansible, which is also got its programing language inside. And they were able to show and demonstrate that they can take millions out of how you deploy applications. So this is not really even the application development code, but this is the code you write to be able to deploy applications.

So within four weeks you're able to prove that you can take out millions of dollars each year in labor and complexity. To quantify that from a number that's inside IBM, we find that our people in those areas will accept about 85% of the code that these products generate, which is our what's the next coding assistance. And that helps overall in about 30% of the productivity of those teams.

If we look at customer experience and customer service, I'll use a start inside IBM. About 70% of the calls that come in, we can now answer them using our AI tools and that's a huge number. Now that's not 70% of the hottest calls and acknowledge that 70% of the easiest, but taking that volume out definitely helps in then making people much faster and that improves NPS by the way. AI doesn't get upset, angry, frustrated, tired, and it scales completely, it can run 24/7. So really there's some advantages in leveraging it in those areas.

And the last one, when I think about digital labor, we began to use it in our internal HR services. So HR services, an employee wants a letter to verify their income so they can get a mortgage or a manager wants to promote somebody and give them a $10,000 raise as opposed to going into the underlying HR tools and spending 15, 20 minutes doing all this, we put a simple AI chatbot in front of the system. So now an employee can just go in and say, I need this letter. All it asks us where do you want it sent to?

Because the system using generative AI can go verify all the information that you normally get asked for and it can go ahead and within 30 seconds you're done. I mean the system will take care of it. Think about the time saving more than that, the experience saving and the satisfaction of everybody to be able to do all this. So this is really leveraging AI to become digital labor. That's why I use that term. So the three use cases are programming and coding. I think is a given. I think that there'll be a lot of productivity. Second is all around customer service and the third is around digital labor.

Wamsi Mohan: Yeah, no, those are all things that definitely resonate in terms of applications that are already seeing the benefit of using generative AI. Maybe it'll be a good sort of segue to talk about IBM's AI differentiation. What is some of the conversations that you're having with clients that are specific to why they should use IBM either from a software framework or from a consulting framework in helping companies really get the value and the potential of all the things that we just discussed from a generative AI standpoint?

Arvind Krishna: So Wamsi, look, there's going to be a lot of innovation in AI and a lot of people are going to be producing AI. So let me just acknowledge that. People really begin to come to us and talk a lot when they want to go from experimentation to production. So as they begin to scale the use of AI inside, so what are the kind of questions that come up? Look, nobody wants to get tied down to only one source of innovation. People want to have multiple sources.

So the first approach we take is that we want our AI to be multi-model. The same way as with hybrid cloud, we approach, people are going to use multiple public clouds and private, here we say it's going to be multi-model, so they're going to use models that they might create. They might use models that IBM creates and they'll use open source models and they'll use models from other proprietary sources. We really want to support all of those models and that's what we do and that is very, very appealing to our clients.

A second is, we don't insist that you only run the AI on our cloud or only one cloud. We allow them to run the AI where they want to. Of course that implies that they have the infrastructure, whether it's GPUs, which is mostly what you run anything that's a reasonable scale on. Out of its very small models, you could run them on CPUs. So as long as they have the infrastructure, they can run it where they want to and we do all the work in our software to make that possible. So that is also very appealing to people.

The third one is we have both a consulting team that has built up a lot of expertise in how to deploy AI and to fine-tune all of these use cases for our clients in addition to having our tech stack. But our consulting team will also work with our partners, they'll whether it's they bring Adobe's Firefly to bear, they bring Azure open AI, they bring Amazon Bracket, they bring all these technologies so that you get the mixture of both the expertise and the technology stacks from IBM.

So if I look across it, the multi-model comes to bear. You run it where you want to including on premise, which is important to many clients outside the United States, but also to clients in certain regulated industries within the country. And so that comes to bear the expertise that we can bring, not just the tech stack comes to bear and then all around the life cycle, how do you maintain these things? How do you manage to make sure you have the right indemnities in place? How do you do the right governance? How do you have the guardrails? And the reason I use the word governance is making sure that biases are creeping in, trying to make sure that you stay within the guardrails in terms of where the answers are coming, et cetera. And so all of those pieces, but putting it as software, putting it with KPIs that the clients can observe makes it very, very interesting for them.

Wamsi Mohan: Yeah, no, for sure. And those guardrails are quite important. We've seen some high profile blowups of not having very good guardrails in place I guess recently. But Arvind, when you think about the deployment of AI, is 2024 going to be the year of scale deployment and how will AI ultimately impact IBM's financials?

Arvind Krishna: Yeah, so I think that in 2024, second half is when I expect to see it start. Look, it's not going to all happen in one month or two months. I think 2023 was a lot of experimentation and the advice I'm giving CIOs and CEOs is it's maybe time to stop experimenting, sit back, think where you could get a lot of advantages and then pick those three, four, five areas to go big on. Now I think that that'll start in the second half of 2024, but I think that'll probably take into 2025 for us to begin to see those massively scaled deployments. There's some in the customer service area, but outside customer service, I wouldn't tell you that there's a lot of massive scale yet.

How will it show up in IBM? Look, we put out a number last time. We said that we doubled our total bookings, so the third to the fourth quarter of 2023 this is, and when we said double, we said that we did a few hundred million, think of that being at the low end of few in the third quarter and we double going into the fourth. And as you would expect, about two-thirds is coming in consulting, which we expect always in the early days and about a third is coming in software.

So we'll be able to see it in our direct numbers, but equally large will be the impact on other products where AI is not the primary reason to buy it, but it'll be one of the reasons to buy it. An example there, Wamsi is the mainframe. Mainframe MIPS have almost doubled over the last five years and some of the AI use cases I think is definitely a piece of it. It's not the only thing, but it's definitely a piece of it. So it'll help overall growth, but there'll also be a direct revenue impact as well.

Wamsi Mohan: Okay, that's really helpful. Arvind, maybe going back to your comments around portfolio, how are you thinking about the portfolio in terms of opportunities to maybe divest more non-core assets? And then maybe in the context of M&A, which I think you said basically would be focused primarily on software to some degree, some tuck-ins in consulting, what kind of size of deals should investors think about? How much liquidity do you have or do you think market should understand that you have to pursue some of this incremental M&A?

Arvind Krishna: Yeah, so let me talk about the M&A topic first before touching on anything else. Look, this year we talked about generating about $12 billion of free cashflow. If we take six for the dividend, that leaves about six. So let take a three-year view. So if I take a three-year view, it'll start of four, five, six. So we'd say that you generate about $14 billion, $15 billion, $16 billion of cash from cashflow that you can put away. We could take on some added debt if we had to. So you would say that you get about anywhere in the $15 billion to $20 billion range over three years or so. Now that's right in line with this year's number of about six. So we would expect to spend about that much on M&A because the focus right now is very much on adding capability to IBM to both maintain and accelerate our growth rate.

So could we if we wanted to take on even more debt to do a larger one, it's possible, but that's not really where we are focused. I think that acquisitions that are in the few billion dollar range, think single-digits, so one to ten in that range is definitely the sweet spot. Mostly in those cases we can bring our distribution, meaning our large geography footprint to bear, we can bring synergy with other products; we can leverage those to increase the growth rate. So you begin to get that. I've always talked about that we need to have three criteria for acquisitions.

Criteria number one, it has to be in our strategy areas that we are focused. So I talked about software and consulting, but in software around hybrid cloud and AI, and you've seen us do that a lot around hybrid cloud, automation and in assets that are going to improve our AI and cyber. That's kind of where we are focused there.

In consulting, mostly it becomes much more about accelerating expertise and capabilities in one of our partners portfolios. So you've seen us do things around AWS around Azure, around Salesforce, around Adobe have kind of been a lot where we have focused our efforts. So number one, strategy number two, we do expect that we become if it's of any size and not of tuck-in, that it becomes accretive in cashflow by the end of the second year. And so that's an important financial discipline that we try and follow. And the third is that we try to always make sure that there is synergy, meaning it's going to grow faster with IBM than without IBM. And is that through other products? Is that because of leveraging our geography, our incumbency? There's a number of different reasons which can contribute to that.

So I think that the sweet spot just given everything that's going on in the market is in that sort of the one to ten range. I think that we want to maintain flexibility. I think we have that with both our cashflow as well as overall liquidity that we could leverage if we had to and I mentioned the criteria. Expect that we'll always be about two-thirds to three-fourths of our acquisitions will be in software and then between a third to a fourth in consulting, both of which then helped the growth rates of both those businesses.

Wamsi Mohan: Okay, that's super helpful context. And when you think about the sort of free cashflow, just so that I make sure I understand, you mentioned about sort $6 billion, you've given you $12 billion minus $6 billion for dividend for this year. We should expect kind of similar amounts over the next couple of years for IBM. And would you be willing to sort of borrow some of that cashflow to do maybe more of those $1 billion to $10 billion deals more quickly to drive growth rates faster or should we think about that at sort of a more measured pace and just consistent over the next several years?

Arvind Krishna: Yeah, so let me maybe answer both those questions and separately. So two years ago we kind of said we'll increase cashflow at $750 million or three-fourths of a billion year-to-year. Last year we did 11, two. This year we are seeing about 12. So that's kind of right in the zone and you should expect increases coming in the subsequent years. So that is the first part. So not only maintain the 12 but go up a year-to-year is kind of our model over there.

Look, the reason I mentioned on response to your last question that take cashflow kind of take a three-year view so you can borrow ahead a couple of years, that gives you a lot more flexibility. And if I take three years always going forward, if I say six this year a bit more than six and then a bit more than seven, that gives you, if I do my math right, a little over $19 billion, $20 billion, something like that, a little bit of borrowing capacity. So you have that kind of flexibility if you wanted to do larger. Now there's a lot of reasons that you may or may not want to do larger. Certainly if something is going to be there, it's strategic, we believe it'll dramatically accelerate the growth rate. We might want to look at it. That said, I think the majority of what you should expect should be much more in that study and smaller range just so that that's where our primary focus is. But we wouldn't look away if there was something more strategic.

Wamsi Mohan: Okay, understood. And when you talk about sort of the areas that you think about that would drive the synergies, that would drive the returns, if you look at your software portfolio for instance, there've been some areas like I think cyber or security has lagged, maybe market growth data and AI maybe have lagged market growth. Would you say that that is the right way for investors to think about what are the areas that are maybe not meeting market growth, which could maybe need some either product augmentation or go-to market augmentation that you can achieve through M&A? Or is it doubling down in areas that have actually grown quite fast and maybe you're taking share in those areas and you can kind of double down into those areas?

Arvind Krishna: Yeah, so I mean, look, I don't think that there is a singular or a perfect way to answer that question because the answer is there's got to be add. So we clearly like to bolster up the areas which are not growing at the rates we want. That said, if you're having a lot of success, that's also an area where you want to double down because there is a lot of interest and a lot of success in those areas. So maybe if you don't mind, I'll unpack your question because the synergy is also an important. So let's take Red Hat for a moment. When we brought Red Hat in, for the first many years, we increased this growth rate. I think if I remember right just before we bought it, their growth rate was about 13%. For the first few years, we grew it at 17%, 18%, 19%. So that's a dramatic acceleration and that was clearly by leveraging IBM's go-to market.

The second part, we also inception to date did $6 billion - $7 billion worth of signings in consulting. So that is revenue which we would not have gotten unless it was inside the portfolio. And that's running at a good sort of couple billion dollars a year run rate in terms of revenue into consulting. So that's an example of synergy. It's also an example of accelerated growth rate and that is an example of a kind of sort of larger acquisition.

But let take another example, a one that we are very happy with that we did late last year on Apptio. We believe that we'll be able to accelerate its growth rate by leveraging our global go-to market as well as by leveraging the whole IBM field that is in front of clients. But we are also going to be building a practice both with our own consulting team and with other system integration and consulting partners that was not as large yet for Apptio.

So that's an example where we are taking an area that we're already in that we are having good success in that we are doubling down on. So that's an example there. But clearly AI is an area where we are going to be looking very, very hard if there is an appropriate target that kind of fits all our criteria and that we believe would be very helpful by accelerating ahead because it's always a question of time-to-market. I'm sort of maybe - I have a lot of pride in what our engineers can do. So I'll say we can build it, but obviously there is a time-to-market and so if you can get a two, three years' time-to-market advantage, we would go look at things that are there.

Now that's a less mature area than automation, so there are fewer targets that meet all our criteria, but it's always an add, it's both. Areas we are behind we are actually willing to go into, but areas we are having a lot of success and there is something there, we would always look at that we would not say it's only one or the other.

Wamsi Mohan: Okay. Okay, that's really helpful and clear. Maybe just one last one here on M&A. As you think about the ones that you have done here, I mean, Red Hat, you spoke about Red Hat and Apptio. You obviously done 34 or the number that you quoted earlier on the call number of deals. Have you been able to accomplish looking backward the targets that you had set out for those deals in terms of the cashflow accretion that you just mentioned and how much of that is yet on the com when we think about the incremental growth and cash flow over the next several years?

Arvind Krishna: So if I look at it in aggregate, I would look you straight in the eye Wamsi and tell you that we have met our cases on revenue growth and on cashflow if I look at it as an aggregate portfolio. Are there some that have done much better? Of course. Are there some that have done not as well as we expect? Yes, but if I look at it as a portfolio, we are right on track and both our CFO, Jim Kavanaugh, me, the business leaders who sponsor these, we are very, very disciplined in making sure that we kind of stick to that discipline. That is what gives us the confidence to say, look, we are willing to go do these.

But you see that in the names. I mean, if you look not just at Apptio, but if you look at a Turbonomic or if we look at one consulting called Okta, if we look at Nord cloud, if we look at our business around Salesforce where we had done something called Bluewool some years back, you look at these and then you see the size of our business going and I think it bears fruit to that.

I'll give you an example. So about three years ago we started buying a few companies in consulting that had Amazon web services skills. Now when we started back in 2020, I think we were like lucky to be in the top 30. I think we were maybe number 35 on their list. It may have been even lower than that. Now we are definitely in the top ten, maybe in some markets getting into the top five. Our annual run rate of business for consulting teams around Amazon is a couple of billion dollars up from zero. So if we look at that, that is far in excess of anything that is even from a single acquisition and that's why I call it the synergy as well comes and plays into it. And you can imagine that that is then a big criteria of how we want to drive acquisitions that actually not only must it meet this business case, but it actually helps our overall growth rate, Wamsi.

Wamsi Mohan: Yeah, no, that might be a good segue to just talk about sort of the consulting market overall and what your outlook there is. I mean, you clearly have shown some very impressive growth over the last several years and part of it is driven by this partnerships that you have embarked on. And you just noted some really strong large pipelines that these hyperscalers, how much more room is there to grow at these hyperscalers and how's the current macro maybe impacting how investors should think about or how you are seeing the business evolve in consulting?

Arvind Krishna: Yeah, so I think three parts. Let me make sure I address all three. I think in terms of the macro, it all depends on each company's portfolio. In the areas where we are in, where technology is much more transformational for our clients, we are not really doing much and managed services if anything, like not at all. We are doing stuff around the hyperscalers and some of the properties like SAP, Salesforce, Adobe, that are very, very important to our clients.

I think that the growth rates around those parts should be related to the growth rates of our partners themselves. So the partners all in, is about 40% of our consulting business. We believe that can get towards 50 maybe more, but let's call it 50 and you got to get through 50 before it goes any higher. I think that those growth rates should remain very healthy and should be in the well above our average growth rate. So that's going to help the overall business. Is it going to be eight, ten, 12? Anything like that is possible in the aggregate of those partners business growing. That's one part.

Two, in the areas where we are helping our clients really be transformational. And when I say transformational, in the macro environment we are in where there's interest rates, where there's inflation, where there supply chain risk. People really want to leverage technology to reduce the risk on those other pieces, which means they want to get more out of their existing assets so there's less CapEx, so there's less of an interest rate burden. They want to be able to scale without always having to add a linear cost of people to the size of the business. Our technology helps you do that by leveraging digital labor, which is what technology is a replacement for. And so if you put those together, we think we are very comfortable saying that our consulting business ought to be able to grow in the above our model or model long-term would be sort off in just above mid-single digit. So think six to eight, we believe that that's a comfortable number to be in.

Now depending on the year, depending upon the quarter-to-quarter from a year ago comparison, there'll be some lumpiness in there. But if I look at it over the year and looking at both our demand signal, which is going forward, or a book-to-bill, which is going backwards, both then taken together make me comfortable around that range for the year. But Wamsi, a really important part of that is the portfolio we are in. So we are not doing a lot of stuff augmentation work, we are not doing a lot of managed services. Those areas are going to, I think get much more impacted than the areas that we are in.

So I think that kind of gives you the macro answer, our comfort around our growth rates in consulting and if I look at our partners, we have these six partners that either are at almost a billion dollars a year or are well on their way to getting there. SAP, Amazon, Microsoft, Salesforce, Oracle, Adobe, and one or two others that we are sort of working on that are not quite there yet. I think I'm comfortable that this set of partners we have picked is going to allow us to keep maintaining the growth rates and on the ones we have picked, we are more than happy to actually double down to do even more with them.

Wamsi Mohan: Yeah, no, it's clearly showing through in your numbers. Maybe Arvind just on consulting, when you think about, you mentioned earlier about sort of your book of business around AI and two-thirds of that or so being around consulting. As you think about the next several years, how many points of growth do you think AI itself could add to your total consulting growth that you just spoke about?

Look, I think that's to be kind of harder question to answer Wamsi. When people are leveraging CRM capability, it helps automate the Salesforce and it makes the Salesforce more productive. They can spend all the time with clients as opposed to doing paperwork and documentation and all those things. Will this be a shift from some of those other areas into AI? Is AI augmenting them? So I hesitate to give you this thing. What I am willing to say is that we are seeing consulting growth, at least looking at this coming year in the 6% to 8%. We had looked at it three years ago or I've told you probably mid-single digits four, five looks more appropriate. So maybe the average has gone up because people are willing and wanting to do more on AI.

I find it hard to ascribe it down to only one thing because that's like asking is it more important that you have really good financials, ERP or is it your supply chain leveraging your ERP system or is it your sales automation? Because I think if I look at it by domain, I think every one of those domains is going to get impacted in a positive way by AI. And as our clients then want to embrace that because it gives them more efficiency and more productivity, they're going to want to leverage AI but in those domains. But I think it's hard to - they're intertwined, so I don't know how to not intertwine them.

Wamsi Mohan: Yeah, no, that's a harder thing to unpack and that makes a lot of sense. Maybe segueing to software and thinking about 2024 - 2023 software had some puts and takes your transaction processing business was very strong, I think helped somewhat by pricing in 2023. And to your point about some of the growth in the mainframe install base as well. And then when we think about other areas of the portfolio, like Red Hat, there was some software growth and I know you had some tougher comps and ELAs exiting 2023, but as we think about 2024, I mean can Red Hat grow double-digit? How should we think about maybe the outlook in transaction processing and what are you most excited about in software?

Arvind Krishna: Yeah, I think in software we had put out that we think our model is a mid-single digit model, so that's kind of four to six. I think in 2024 we'll grow software just to touch above that model. And your question really is then what's your confidence and how are you going to do that? So I'll first touch on some numbers and then come back to our confidence in each of those.

So I think that Red Hat, even if I presume just the lower end or double-digits or just 10% contributes about 2.5 points to our overall software growth. And I'll come back and address the Red Hat growth question, Wamsi. The acquisitions we have already announced, albeit one of them around the software AG pieces yet to close, so Apptio for three quarters of the year and software AG, which we expect somewhere around mid-year will contribute about another two points to the year. That's 4.5 between just those two pieces.

Then I think transaction processing will continue to grow. I don't think it would be appropriate to presume the last two years of growth on it, but if you put it at one, two points of growth for itself, that'll contribute maybe a quarter to a half point to overall software growth. And then of course there is all the other pieces we haven't even touched on all the other acquisitions, the organic innovations we are doing, the work we are doing in AI, the fact that 80% of our software base is now recurring revenue and within that we have seen growth last year or even outside of TPS. You put all that together and you can say another point or two. So that is what makes us comfortable around somewhere around over six, maybe not quite seven, but that range of software growth, Wamsi.

That then leaves your question open because you asked it, what about Red Hat? So you're right. In Red Hat we came down to 7% in the fourth quarter we were at 8%, if I remember in the third quarter, what gives us confidence about getting that growth rate back? So in Red Hat are bookings, which is not revenue, but just an indication of future revenue, but it is a commitment from a client was 14% and 17%. So that gives us an indication that in the second half of 2023, we began to build back a book of business in Red Hat, which gives us confidence towards a double-digit. So I combined what we did there, what we've done so far to date till last - end of last year, gives us visibility into about 60% of Red Hat going forward. But then I began to look at the pipeline and the demand signals, which is we've got to go execute to go get it all.

But I look at the pipeline and the demand signals and Red Hat about what's happening now, and that gives me confidence that for the year as an aggregate, we should be able to get to the low end or double-digit. Now that's going to sort of build up. So eight, seven we ended last year, so it'll build up over this year where for the year as a whole, we should be able to do that with probably a slightly improving trajectory over the course of 2024. So just to close it back up 2.5 points from Red Hat, two points from acquisitions, a little bit from transaction processing on mainframe software and then on our organic or the rest of the portfolio. One should be able to see something both given the nature of NRR as well as the pipelines that we see in that part of the business. So that gives us a sort of confidence to us at six to seven.

Wamsi Mohan: Yeah, no, that's really helpful. And if I could just follow up on that Red Hat comment that you made, Arvind. If we think about some of the deceleration that was attributable to some of the project-based services in your bookings and in the activity that you're seeing at customers, is that starting to re-pick up or is it more around the growth around Ansible and OpenShift that is driving a re-acceleration in that growth?

Arvind Krishna: The re-acceleration is mostly coming from Ansible, Red Hat Clinics as well as OpenShift. So all three of those, the product-based businesses are contributing it. You're right, the project-based businesses was a cause of the deacceleration, but we are not seeing that erode any further. So now that that's behind us, the year-to-year there is there, but when you get 17% growth on the product-based businesses, which are much, much bigger, that gives us confidence towards then wrapping back there and there's no longer any more headwind from those project-based services is the best way to look at it.

Wamsi Mohan: Okay, that's really helpful. And then just on transaction processing or when, I mean there was many years where transaction processing kind of declined in the maybe mid to high single-digit range, and obviously the last two years have been very strong. What is it that's changed within transaction processing? Why is the business starting to now, even if it's flat to up low single-digit, what is the actual change, underlying change? Is it better go-to market? Is it better product? Is it more MITS installed? But how should investors really get comfortable with the sustainability of it?

Arvind Krishna: Yeah, so I think there's three pieces in there. The first and most important, transaction processing is tied to the capacity of mainframes out there. Historically we might have increased but very, very little. And then when you talk about price performance, you put those together that leads to the decline. Last two cycles, we have done 150% and 120%, meaning that the actual install base has increased dramatically in the last five years. So if you need more capacity, that leads to more growth on the mainframe base. Now I don't expect it to grow up at the same rate going forward, which is why I said maybe lower growth, maybe sort of single, low single-digit growth, not mid-single digit growth. That's one part.

The second part is we have done a lot more innovation. We're bringing a lot more capabilities around AI and self-service into the mainframe arena and that causes our clients to want to consume a lot more and that results in it. So it's both innovation, but I would really give capacity a primary reason.

Three, historically we gave away a lot of price in the past. Look, I think the platform is incredibly valuable. So of course, we need to be competitive and of course, clients need to feel that they're getting a fair price, but we have been able to put very modest price increases in over the last couple of years. I expect those will be more muted going forward, but I don't think we'll be decreasing prices in this part of the portfolio going forward. So I would put all those three in that order. Number one, capacity, most important, innovation and new products and then three is the price increase. I think all those together then give us the behavior we have seen Wamsi over the last many years.

Wamsi Mohan: So Arvind, just to follow up on the mainframe, like would you say that the peak-to-peak revenue performance, is that the best way to gauge the success of a cycle or is that not kind of the right way to characterize how you think about it?

Arvind Krishna: So I don't think of it that way. Peak-to-peak would typically mean the first fourth quarter versus the first fourth quarter of a new cycle. I would actually encourage you not to think of it that way. I think the best way to look at it is, what is the revenue and let's call it the first three years since the introduction of a cycle, and then what is the revenue in the next time we introduce something over the next three years. So you're looking at it instead of three-year chunks as an aggregate.

So when I call it cycle-to-cycle, I'm actually looking at it all in. From the beginning of the cycle over the first two years, the first three years to the next one. If that number is 110% or 115%, that's a really healthy number because that number historically used to be more like 95% if I go back to the mid-2010s. That I think is the way to look at it because that tells you you're getting some pricing, you're getting capacity, you're getting uptake, you're getting people putting in these systems because they're running their critical workloads. And that is sort of I think the healthiest way of Wamsi to look at mainframe.

Wamsi Mohan: Okay. That makes a lot of sense. I know we don't have a ton more time left, but I did want to touch on quantum. It is something unique that IBM has been pretty early in looking at and investing a lot of R&D into quantum. When does quantum start to get material and maybe if you want to address any other large opportunities that you're investing in?

Arvind Krishna: Yeah, look, I think quantum is going to result in big commercial impacts. I'll have to give you a range. I can't give you a precise month. Is it three years, five years, six years? It's kind of in that three to seven range, I believe. I actually also believe Wamsi that the questions are now that of engineering no longer that of physics or can we do it. So just to give people first some sense of where we are. We are one of the few, not the only, but one of the few who build actual quantum computers. I just want to be clear. The advantages and the big commercial opportunities are tied to actual quantum computers. You can't make it in software that runs on a simulator. You can't have it in only in software. You need an actual quantum computer. And you can think of that like GPUs.

You can simulate a GPU on a CPU, but it's not the same as having one. The term quantum computers, you need to have it. We have them. Where are we? We showed a thousand cubit quantum computer last year. We actually put a 400 qubit. Qubits are kind of the commonly held measure of how powerful are these quantum computers or quantum bits. We had a 400 qubit one out on our cloud. We are now working to make the modular so you can string together these quantum computers instead of 100 and 400 qubit editions. As we do that, we think that in the next three, four, five years, we will get to a quantum computer that can begin to scale and solve really interesting problems.

Some of the underlying problems that people worry about are error rates and how big can you get? We think that we can mitigate those error rates are actually going to get mitigated by error correction. So that needs a much smaller multiple increase of the machine now than people had sort of foreseen probably even two or three years ago.

So you put all that together and I think that with our modularity approach and our error correction approach, we are going to be in a really interesting range in sort of that three, four, five-year timeframe. The kind of problems is probably even more important. I think that there is two that are right in the sweet spot. The first is going to be around financial risk. Can you do better pricing of risk instruments? Can you do better competition of risk in a portfolio? And we really believe that those are some of the problems that Quantum can address. And maybe instead of doing an overnight Monte

Carlo simulation once a week, you can maybe run these in seconds in real-time and that could be a massive advantage.

A second one I think is going to be around materials. And you look at recent materials, I think that pharmaceutical or biological molecules are tougher. Those will take more time. We are working on it with a few people like the Cleveland Clinic, but materials like lithium, hydride batteries, lubricants, carbon sequestration, alloys, lightweight materials, I think those will be right in the sweet spot for the kind of machines that I'm describing.

If you look at those industries, the materials industry I described is measured in the trillions of dollars. A small improvement one can make there means the technology vendors can take a fraction of that, but when the numbers at the base are so big, it kind of has a massive impact on the opportunity and financial risk. I mean, you and your colleagues of this call are probably better at estimating the impact of that, but I think that these are going to be massive opportunities for quantum in the timeframe that I'm describing.

Wamsi Mohan: No, that's great. And Arvind, you've been so generous with your time. I know we're at the top of the hour, but I just want to maybe give you the opportunity to just talk about, as we look over the next five years, what is the key message around the IBM story that you want investors to walk away with and how do you intend to unlock incremental shareholder value? And again, thank you so much for taking the time to do this.

Arvind Krishna: Yeah, Wamsi, I think most important, we are now on a path of sustained and accelerating growth. That is very different than where we were five years ago. Two, we are in areas that are really critical to our clients. When we talk about hybrid cloud or we talk about platforms like OpenShift, we talk about automation, we talk about AI, these are all areas that are incredibly important. In consulting we are now demonstrated for two years that we can grow faster than the market and we intend to continue to do that.

That turns into accelerating cashflow growth year-over-year. We are going to be investing or reinvesting a portion of that. A portion of course goes back to our investors and owners. So sustained and accelerating growth in areas that are really interesting for our clients and for ourselves, and a maintained emphasis on innovation that can help our clients take cost out and grow the revenue faster. That's kind of is the company that we are creating. I think we are kind of halfway down the path if I was to characterize it, and the second half has to go. So you can extrapolate from there based on some of your comments at the beginning.

Wamsi Mohan: Arvind, thank you so much. That was amazing. We really appreciate all the insight and all the knowledge that you bring to any topic that you had the pleasure of interacting with you for so many years, and I always walk away with feeling a little bit smarter than I did before the call and before a conversation. So very much appreciate you taking the time to do this. Thank you so much and wish you continued success. It's been a great performance. You've done a lot over here and we look forward to getting an update from you again, hopefully next year.

Arvind Krishna: Wamsi, thank you again for your time and the questions. Thanks.

Wamsi Mohan: Thank you everyone. Thanks everyone for joining us today and that does wrap up the call today. If you have any follow-ups, please do feel free to reach out via email, Bloomberg or phone call and we'll try our best to get your questions answered. Thank you again.

Models

Figure 1: IBM Income Statement

We model F24 revenue/EPS of $63.7bn/$10.00

IBM	2023A				2024E								
($ Millions Except Per Share Data)	**Mar**	**Jun**	**Sep**	**Dec**	**Mar**	**Jun**	**Sep**	**Dec**	**2022A**	**2023A**	**2024E**	**2025E**	**2026E**
Income Statement													
Total Revenue	**$14,252**	**$15,475**	**$14,752**	**$17,381**	**$14,664**	**$15,812**	**$15,220**	**$17,983**	**$60,529**	**$61,861**	**$63,679**	**$66,213**	**$69,930**
Hybrid Platform & Solutions	$4,203	$4,707	$4,500	$5,315	$4,473	$5,005	$4,801	$5,617	$17,846	$18,725	$19,897	$20,872	$21,923
Transaction Processing	$1,718	$1,901	$1,765	$2,199	$1,718	$1,920	$1,782	$2,243	$7,190	$7,583	$7,663	$7,663	$7,663
Software	$5,921	$6,608	$6,265	$7,514	$6,192	$6,925	$6,584	$7,860	$25,036	$26,308	$27,560	$28,535	$29,586
Business Transformation	$2,324	$2,227	$2,312	$2,265	$2,440	$2,339	$2,435	$2,384	$9,017	$9,128	$9,598	$10,028	$10,480
Technology Consulting	$939	$1,022	$955	$998	$1,007	$1,095	$1,024	$1,070	$3,764	$3,914	$4,196	$4,310	$4,430
Application Operations	$1,699	$1,764	$1,696	$1,786	$1,869	$1,940	$1,865	$1,965	$6,327	$6,944	$7,639	$7,639	$7,639
Consulting	$4,962	$5,013	$4,963	$5,048	$5,316	$5,374	$5,324	$5,419	$19,108	$19,986	$21,433	$21,977	$22,549
Hybrid Infrastructure	$1,722	$2,264	$1,931	$3,320	$1,596	$1,988	$1,798	$3,257	$9,440	$9,237	$8,639	$9,750	$11,937
Infrastructure Support	$1,376	$1,354	$1,341	$1,284	$1,307	$1,286	$1,274	$1,219	$5,850	$5,355	$5,087	$4,985	$4,886
Infrastructure	$3,098	$3,618	$3,272	$4,604	$2,903	$3,274	$3,072	$4,476	$15,290	$14,592	$13,726	$14,736	$16,822
Financing	$196	$185	$186	$175	$198	$186	$188	$176	$645	$742	$749	$757	$764
Other	$74	$52	$67	$41	$54	$53	$52	$52	$452	$234	$211	$209	$208
Total Cost of Revenue	**6,742**	**6,975**	**6,729**	**7,114**	**6,767**	**7,391**	**7,037**	**8,012**	**27,842**	**27,561**	**29,207**	**29,798**	**31,322**
Cost of Software	1,214	1,368	1,284	1,375	1,269	1,433	1,350	1,423	5,096	5,241	5,475	5,669	5,879
Cost of Consulting	3,712	3,715	3,603	3,650	3,961	3,966	3,849	3,901	14,242	14,679	15,677	16,010	16,358
Cost of Infrastructure	1,497	1,599	1,521	1,814	1,262	1,695	1,567	2,362	7,221	6,431	6,887	6,955	7,919
Cost of Financing	110	94	94	87	111	95	94	88	398	385	388	391	394
Other	210	200	227	189	163	202	177	238	885	826	780	773	773
Operating Gross Profit	**$7,658**	**$8,650**	**$8,185**	**$10,439**	**$8,070**	**$8,593**	**$8,355**	**$10,143**	**$33,369**	**$34,932**	**$35,160**	**$37,103**	**$39,296**
Total Operating Expense	6,262	6,342	5,866	6,268	6,179	6,037	5,778	6,251	24,095	24,738	24,245	25,199	26,602
R&D	1,655	1,687	1,685	1,748	1,659	1,676	1,693	1,755	6,567	6,775	6,782	7,052	7,450
SG&A	4,607	4,655	4,181	4,520	4,520	4,361	4,085	4,497	17,528	17,963	17,463	18,147	19,152
Intellectual Property Income	178	248	190	242	147	206	198	252	663	858	802	662	699
Operating Income (Cont. Ops)	**1,574**	**2,556**	**2,509**	**4,413**	**2,037**	**2,761**	**2,775**	**4,144**	**9,937**	**11,052**	**11,716**	**12,566**	**13,393**
Net Interest Expense	(367)	(423)	(412)	(405)	(339)	(327)	(315)	(315)	(1,216)	(1,607)	(1,297)	(1,201)	(1,105)
Other Income	242	262	203	159	50	100	100	100	1,100	866	350	300	300
Pretax Income (Cont. Ops)	**1,449**	**2,395**	**2,300**	**4,167**	**1,748**	**2,534**	**2,559**	**3,929**	**9,821**	**10,311**	**10,769**	**11,665**	**12,588**
Income Taxes	200	393	268	580	245	355	358	550	1,495	1,441	1,508	1,866	2,014
Net Inc. avail. To Shareholders	**1,249**	**2,002**	**2,032**	**3,587**	**1,503**	**2,179**	**2,201**	**3,379**	**8,326**	**8,870**	**9,262**	**9,799**	**10,574**
Preferred Dividend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EPS (Cont. Ops)	**$1.36**	**$2.18**	**$2.20**	**$3.87**	**$1.63**	**$2.36**	**$2.37**	**$3.63**	**$9.13**	**$9.62**	**$10.00**	**$10.47**	**$11.18**
Average Shares (MM Diluted)	918	920	924	927	923	925	927	930	912	922	926	936	945
Income Statement (Cont'd)													
Total Revenues (Y/Y)	0%	0%	5%	4%	3%	2%	3%	3%	6%	2%	3%	4%	6%
Operating Expense	5%	1%	2%	3%	-1%	-5%	-2%	0%	0%	3%	(2%)	4%	6%
R&D	-1%	1%	5%	9%	0%	-1%	0%	0%	1%	3%	0%	4%	6%
SG&A	7%	2%	1%	0%	-2%	-6%	-2%	-1%	(0%)	2%	(3%)	4%	6%
Operating Income	-4%	7%	28%	12%	29%	8%	11%	-6%	14%	11%	6%	7%	7%
Pretax Income	-4%	-5%	17%	9%	21%	6%	11%	-6%	25%	5%	4%	8%	8%
Net Income	-2%	-5%	23%	9%	20%	9%	8%	-6%	16%	7%	4%	6%	8%
EPS	-3%	-6%	22%	7%	20%	8%	8%	-6%	15%	5%	4%	5%	7%
Diluted Shares (Y/Y)	1%	1%	1%	1%	1%	1%	0%	0%	1%	1%	0%	1%	1%
% of Revenues													
Gross Profit	53.7%	55.9%	55.5%	60.1%	55.0%	54.3%	54.9%	56.4%	55.1%	56.5%	55.2%	56.0%	56.2%
Operating Expense	43.9%	41.0%	39.8%	36.1%	42.1%	38.2%	38.0%	34.8%	39.8%	40.0%	38.1%	38.1%	38.0%
R&D	11.6%	10.9%	11.4%	10.1%	11.3%	10.6%	11.1%	9.8%	10.8%	11.0%	10.7%	10.7%	10.7%
SG&A	32.3%	30.1%	28.3%	26.0%	30.8%	27.6%	26.8%	25.0%	29.0%	29.0%	27.4%	27.4%	27.4%
Operating Income	11.0%	16.5%	17.0%	25.4%	13.9%	17.5%	18.2%	23.0%	16.4%	17.9%	18.4%	19.0%	19.2%
Pretax Income	10.2%	15.5%	15.6%	24.0%	11.9%	16.0%	16.8%	21.8%	16.2%	16.7%	16.9%	17.6%	18.0%
Effective Tax Rate	13.8%	16.4%	11.7%	13.9%	14.0%	14.0%	14.0%	14.0%	15.2%	14.0%	14.0%	16.0%	16.0%
Net Income	8.8%	12.9%	13.8%	20.6%	10.3%	13.8%	14.5%	18.8%	13.8%	14.3%	14.5%	14.8%	15.1%

Source: Company Reports, BofA Global Research estimates

BofA GLOBAL RESEARCH

Price objective basis & risk

International Business Machines Corp. (IBM)

Our PO of $220 is based on 18x EV/C25 FCF. Our target multiple for IBM is at the high end of the historical range 11-19x. We believe a multiple at the high end of the historical range is justified given the company's improving growth and FCF trajectory with Red Hat.

Downside risks to our price objective are: (1) failure to execute on the company's growth roadmap, (2) inability to realize expected cost savings from restructuring, (3) technology/competitor risk in hardware, software, and services, (4) unforeseen currency impacts on revenue and profits, (5) acquisition integration, given IBM's acquisitive nature, and (6) increased concern of economic uncertainty and tightening corporate IT budgets.

Upside risks to our price objective are: (1) faster reacceleration of topline, (2) faster improvement in margins, (3) better-than-expected accretion from M&A, and (4) delivery of upside to FCF.

Analyst Certification

I, Wamsi Mohan, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

US - IT Hardware and Technology Supply Chain Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Amphenol	APH	APH US	Wamsi Mohan
	Apple Inc.	AAPL	AAPL US	Wamsi Mohan
	Corning Inc.	GLW	GLW US	Wamsi Mohan
	Dell Technologies Inc.	DELL	DELL US	Wamsi Mohan
	Flex Ltd.	FLEX	FLEX US	Ruplu Bhattacharya
	HP Inc.	HPQ	HPQ US	Wamsi Mohan
	International Business Machines Corp.	IBM	IBM US	Wamsi Mohan
	Jabil Inc.	JBL	JBL US	Ruplu Bhattacharya
	Nutanix Inc	NTNX	NTNX US	Wamsi Mohan
	Roku, Inc.	ROKU	ROKU US	Ruplu Bhattacharya
	Seagate Technology	STX	STX US	Wamsi Mohan
	Super Micro Computer Inc.	SMCI	SMCI US	Ruplu Bhattacharya
	TD Synnex Corp	SNX	SNX US	Ruplu Bhattacharya
	TE Connectivity Ltd.	TEL	TEL US	Wamsi Mohan
	Western Digital Corporation	WDC	WDC US	Wamsi Mohan
NEUTRAL				
	Arrow Electronics Inc.	ARW	ARW US	Ruplu Bhattacharya
	Avnet Inc.	AVT	AVT US	Ruplu Bhattacharya
	CDW Corp	CDW	CDW US	Ruplu Bhattacharya
	Concentrix Corporation	CNXC	CNXC US	Ruplu Bhattacharya
	Hewlett-Packard Enterprise	HPE	HPE US	Wamsi Mohan
	Pure Storage	PSTG	PSTG US	Wamsi Mohan
	Sensata Technologies Holdings Plc	ST	ST US	Wamsi Mohan
	Teradata Corporation	TDC	TDC US	Wamsi Mohan
UNDERPERFORM				
	DigitalOcean	DOCN	DOCN US	Wamsi Mohan
	NetApp Inc.	NTAP	NTAP US	Wamsi Mohan
	Sanmina Corporation	SANM	SANM US	Ruplu Bhattacharya
	Vishay Intertechnology, Inc.	VSH	VSH US	Ruplu Bhattacharya

US - IT Hardware and Technology Supply Chain Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst

*iQ*method[SM] Measures Definitions

Business Performance	Numerator	Denominator
Return On Capital Employed	NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization	Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill Amortization
Return On Equity	Net Income	Shareholders' Equity
Operating Margin	Operating Profit	Sales
Earnings Growth	Expected 5 Year CAGR From Latest Actual	N/A
Free Cash Flow	Cash Flow From Operations – Total Capex	N/A
Quality of Earnings	**Numerator**	**Denominator**
Cash Realization Ratio	Cash Flow From Operations	Net Income
Asset Replacement Ratio	Capex	Depreciation
Tax Rate	Tax Charge	Pre-Tax Income
Net Debt-To-Equity Ratio	Net Debt = Total Debt – Cash & Equivalents	Total Equity
Interest Cover	EBIT	Interest Expense
Valuation Toolkit	**Numerator**	**Denominator**
Price / Earnings Ratio	Current Share Price	Diluted Earnings Per Share (Basis As Specified)
Price / Book Value	Current Share Price	Shareholders' Equity / Current Basic Shares
Dividend Yield	Annualised Declared Cash Dividend	Current Share Price
Free Cash Flow Yield	Cash Flow From Operations – Total Capex	Market Cap = Current Share Price × Current Basic Shares
Enterprise Value / Sales	EV = Current Share Price × Current Shares + Minority Equity + Net Debt + Other LT Liabilities	Sales
EV / EBITDA	Enterprise Value	Basic EBIT + Depreciation + Amortization

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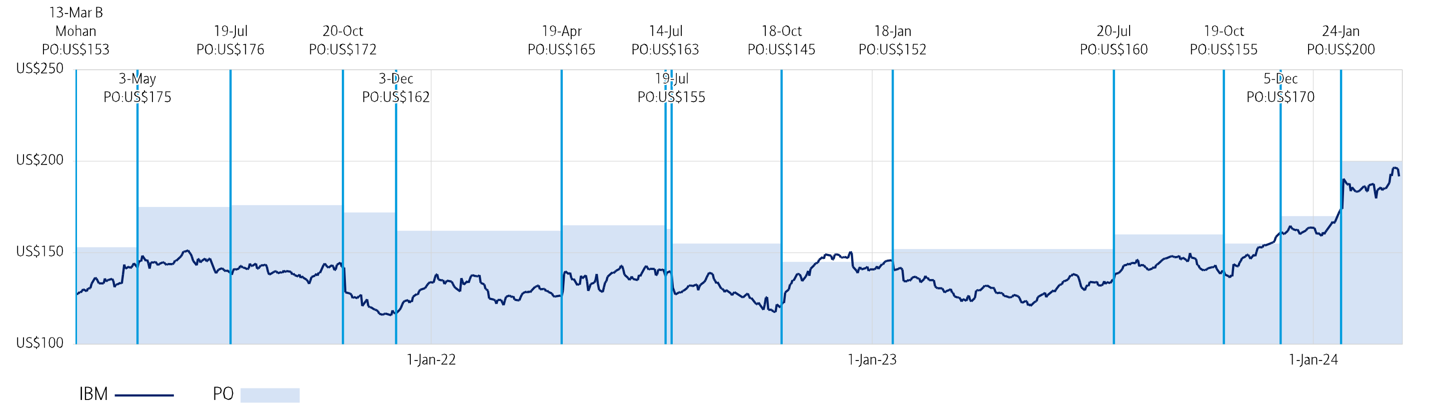
Important Disclosures

Int Business Machine (IBM) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Equity Investment Rating Distribution: Technology Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R1	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R1	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

[R1] Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster[R2]
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

[R2]Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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