



Emissions Reduction

Decarbonizing IT Infrastructure



SALESFORCE SUSTAINABILITY, 2022



Executive Summary

Every day, billions of people around the globe glance at computers, smartphones, or tablets. They're looking at weather forecasts, texts from loved ones, a Slack message from a colleague halfway around the world about an idea that will change the strategic direction of an entire company. We rely on technology to keep us connected, to work, to ask questions, to show us things we've never seen before.

Behind all of these moments, behind the information zipping from continent to continent, are rows upon rows of servers - essentially industrial-grade computers - that whir away in giant warehouses called data centers. Although few of us have ever been inside these expansive buildings, almost all of us rely on their computing power to make our daily lives possible.

A company doesn't have to be an "IT company" to be reliant on IT to get things done. Logistics, communications, building operations, fleet management, virtual work - so many business-critical processes would be impossible without IT infrastructure behind the scenes. Even the pizza place on the corner is software-dependent - from processing payments to purchasing pepperoni. That's why decarbonizing IT infrastructure should be a part of climate action planning for all companies, regardless of sector or location.

At Salesforce, we use a combination of colocation data center capacity (rented space in shared data center facilities) and public cloud services. This means that we focus both on making sure the space where we operate directly runs as efficiently as possible and on working with our public cloud partners to optimize the services we contract. Through this combined approach, we avoid, reduce, and compensate for all greenhouse gas (GHG) emissions across our entire IT infrastructure.



"Maintaining high customer trust and continuously innovating leads us naturally to pursue sustainability opportunities. At the end of the day, sustainable engineering is simply good engineering. We will keep pushing the envelope to stay hyper-competitive and at the same time help the world avoid a devastating climate emergency."

Srinivas Tallapragada, President and Chief Engineering Officer, Salesforce

At Salesforce, we're driving towards a 1.5°C future by focusing on these six sustainability priorities.



EMISSIONS
REDUCTION



CARBON
REMOVAL



TRILLION TREES &
ECOSYSTEM
RESTORATION



EDUCATION &
MOBILIZATION



INNOVATION



REGULATION
& POLICY

Learn more about our [Climate Action Plan](#) and how you can accelerate your own journey to net zero emissions.

A Complex Landscape

Almost every business relies on IT infrastructure in one way or another. Today, the IT ecosystem as a whole accounts for about [2% of global GHG emissions](#). That might seem small, but as companies increasingly rely on digital infrastructure to operate in a global market, this number will almost certainly continue to rise.

Reducing infrastructure emissions is not a straightforward task. Here's why:

Rapidly Changing Requirements

For most companies, infrastructure needs are a moving target. For some, growth is off the charts and teams are scrambling to find the infrastructure resources to meet demand. Changes in security requirements, product offerings, and other business drivers all mean that companies' infrastructure needs change drastically, often with relatively little warning. This can make planning for efficiency and emissions reductions extremely challenging.

Variety of IT infrastructure

Some companies rely on on-site data centers that they design, own, and operate themselves. Some lease data center space in shared "colocation" facilities. Others rely on public cloud "infrastructure-as-a-service" providers, while many - including Salesforce - use a combination of these approaches. Decarbonization strategies look very different for each.

Evolving Regulations Governing Data Storage

Rapidly evolving regulations governing data storage often mean that companies must operate smaller, more localized facilities in order to keep data within certain geographic constraints.

Limited Influence

Companies often have limited control over design and operational choices. Choices can be limited based on geostrategy challenges (e.g. residency requirements for large customers) and the need to provide extremely reliable uptime for critical infrastructure that serves private and public sectors.

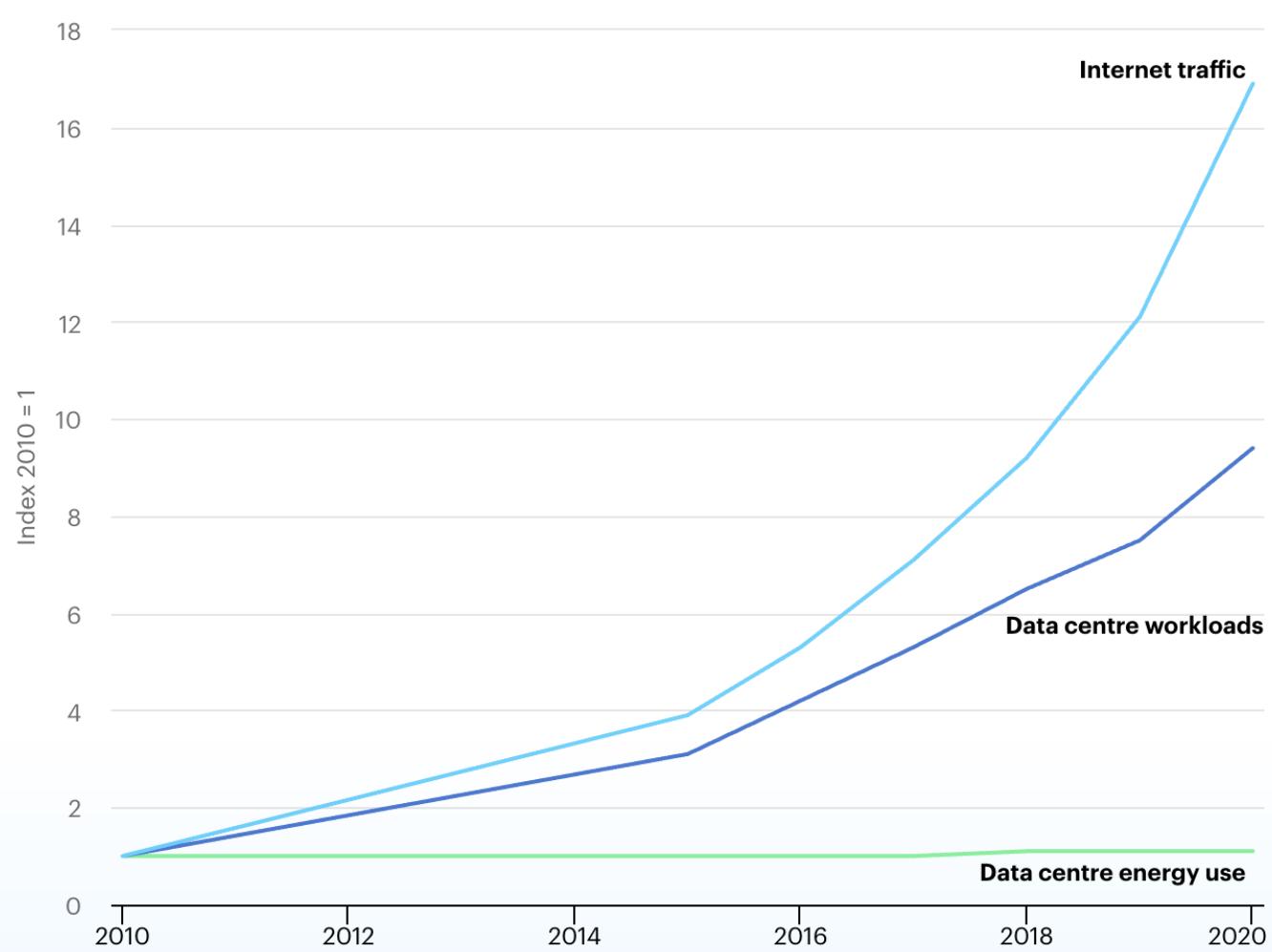
Emissions Data Availability

When companies share IT infrastructure, it can be challenging to identify the portion of total emissions attributable to each. It's also often difficult to access any kind of emissions data for colocation sites.

Despite these challenges, companies have already had some success decarbonizing IT infrastructure.

Since 2010, global energy demand from data center infrastructure has remained flat even as workloads and internet traffic have increased dramatically (see Figure 1). This is a truly remarkable feat of human innovation - and we need to do more. In order to meet the global goal of net zero by 2050, we collectively need to further reduce emissions from IT infrastructure dramatically.

Figure 1: Growth in Internet traffic, Data center workloads, and Data center energy use¹



¹ [Data Centres and Data transmission Networks, International Energy Agency](#)

Avoid, Reduce Compensate

At Salesforce, data center infrastructure is a significant part of our GHG footprint², which means reducing these emissions is a key part of our decarbonization program. First, we reduce our energy use as much as possible. After all, the greenest electron is the one you never use. Then we match all electricity used in colocation data centers with renewable energy and compensate for the remaining emissions by purchasing high-quality carbon credits³.

Reducing infrastructure energy use isn't as simple as turning off a light switch or plugging in an LED bulb in place of an incandescent. Here are some of the ways we minimize the energy - and the resulting emissions - it takes to power Salesforce infrastructure:

Code is Key

First, we know it's critically important to increase the efficiency of our software code. Writing more efficient code is key, since building more efficient software means we can achieve more with each kilowatt hour of energy we use. This is true across both physical data centers and the public cloud, so it's the most critical part of our strategy since its impacts are felt across our entire infrastructure footprint.

This is where our strategy splits. Reducing emissions in "first party" (i.e. colocation) data centers takes a very different set of strategies from decarbonizing our "public cloud" (i.e. infrastructure-as-a-service) footprint.



First Party Data Centers

Impact depends on decisions from site selection through software development. Environmental impacts such as emissions, water use, waste and hazardous materials hinge on decisions across the value chain.

Region/Location → Data Center → Hardware → Network/Software → Customer

² [Salesforce Stakeholder Impact Report](#)

³ We follow a robust due diligence process to vet carbon credits before we procure them. For every potential carbon credit purchase, we apply a set of detailed criteria that are based on global best practices. We also work with qualified independent consultants and expert brokers to help guide us.



Impact from physical data centers depends on decisions from the site selection process all the way through software development. When possible, we begin by choosing to operate space in data centers that are located in regions with access to clean and renewable energy. Location determines at the most fundamental level which choices are on the table and which are not when it comes to decarbonizing operations.

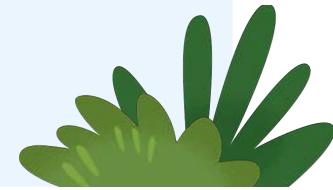
After location, the next most meaningful set of decisions have to do with the physical data center. Is it designed efficiently? What type of cooling does it rely on? We try to select data centers that minimize the amount of “overhead” energy required to power IT equipment. We want as much of the energy that’s being used to go directly to powering the servers and other IT equipment. In technical terms, this means aiming for a [PUE⁴](#) as close to 1.0 as possible.

Next, we think about the hardware we use - how we configure it, commission it, and decommission it when it's no longer needed. In other words, we do more with less by prioritizing high utilization in our hardware architecture.

We do this by using our data center space and equipment as close to fully loaded as possible to minimize unnecessary energy overhead. This means accelerating build and decommission timelines so we aren't cooling and lighting empty rooms, and making sure the hardware that's plugged in and turned on is actually doing as much useful work as possible.

Increasing Hardware Efficiency

Once we've figured out which specific types of hardware we need in order to optimize utilization, we make sure the specific pieces of hardware we choose are the most efficient of all available options. Each time we roll out new hardware, we ensure it delivers better performance per unit of energy than the hardware that was there previously. We also collaborate with hardware vendors to do better. We sit on Dell's [Sustainability Customer Advisory Board](#) and are always looking for new ways to engage in the conversation.



Engaging with Data Center Partners

Because we operate in shared colocation facilities, this means working in close partnership with our data center partners. As a starting point, we always request high efficiency, water-free, and zero-waste infrastructure when we enter new data center spaces. Then we work with our partners to identify opportunities for efficiency improvements, and we use what we learn to set clear efficiency requirements that prioritize free-air cooling, airflow optimization, data center equipment refreshes, and regular maintenance.



Importantly, we also make it clear that we prefer to work with partners and suppliers who match 100% of their energy use with renewable energy and offset whatever emissions remain with high-quality carbon credits.

⁴ PUE stands for Power Usage Effectiveness. PUE is a data center efficiency metric that compares the ratio of energy that enters a building to the energy used to power IT equipment. Ideally, almost all energy that enters a building should be powering IT equipment with very little used for heating, cooling, lighting, etc.

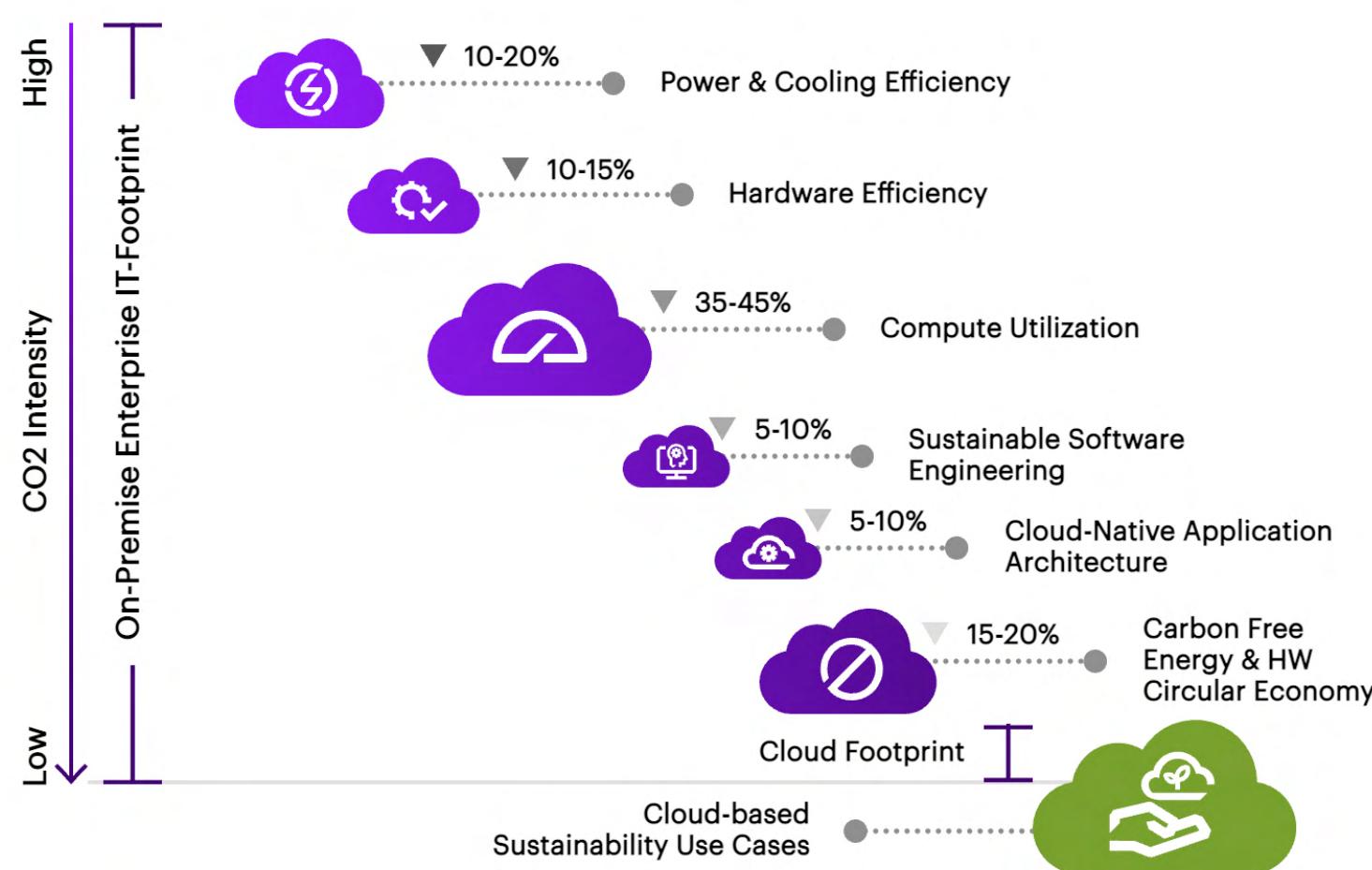


Public Cloud

For the portion of our IT footprint that's served by public cloud infrastructure, we don't have the ability to dictate exactly what hardware is used. Instead, we work in trusted partnership with our public cloud partners to accelerate their own journeys to net zero. By using public cloud, we're also able to leverage the inherent efficiencies of public cloud infrastructure (see Figure 2).

Figure 2: Carbon Reductions That Can Be Achieved by Moving to the Cloud⁵

The graphic below indicates the incremental levels of carbon reduction that can be achieved—the greater the ambition, the greater the reduction in carbon emissions.



These are some of the ways we partner with others to decarbonize public cloud infrastructure:

Optimizing Deployments

We prioritize doing business with public cloud providers that make it possible for customers like Salesforce to choose carbon-free public cloud services. Increasingly, this is becoming a competitive differentiator for public cloud providers and we want to send a demand signal that accelerates this trend. We've also rolled out a [Sustainability Exhibit](#) as part of our standard contracting process for all suppliers, emphasizing our preference for working with partners and suppliers who commit to climate action.

Pushing for Public Cloud Partner Data Transparency

Sometimes, it can be challenging to get emissions data from public cloud providers. This makes it hard to differentiate between providers and opt for suppliers who offer lower-carbon services. So we ask for increased transparency from public cloud vendors. Understanding vendors' emissions impact is critical. Without that information, it's impossible to make lower-carbon procurement decisions.

Partnering in the Pursuit of a Cleaner Cloud for All

We collaborate with partners, peers, and colleagues to develop new strategies that minimize the public cloud's carbon impact. For example, we were actively involved in creating the [Corporate Colocation and Cloud Buyers' Principles](#).

Getting to Net Zero Emissions

Decarbonization is the most important part of any company's climate action plan. We start by doing all we can to avoid and reduce energy use in first-party data centers and the public cloud. Then, for the emissions we cannot yet reduce, we purchase renewable energy to fully match the electricity we use in colocation data centers with [100% renewable energy](#). Lastly, when we can't directly reduce any additional emissions, we purchase high-quality carbon credits to bring our total net infrastructure emissions across all of scopes 1, 2, and 3 to zero.

⁵ [The green behind the cloud, Accenture](#)





Carbon to Serve: Doing More with Less

Not all infrastructure does the same amount of work for every kilowatt hour of energy it consumes. While we knew that we had variations in the efficiency of our infrastructure, we didn't have a good way to talk about these differences, see improvement over time, spot anomalies, and fix them.

That's why we created a new metric: Carbon to Serve. Carbon to Serve measures the quantity of GHG emissions that it takes to deliver services for various products that are part of the Salesforce portfolio. Being able to look at one specific number and analyze its variations - by geography, by product, etc. - has been incredibly helpful as we work to decarbonize our IT infrastructure. Today, we're using Carbon to Serve to analyze the efficiency of approximately 90% of our colocation data center infrastructure, and it shows an 18% improvement over the past year.

Carbon to Serve In Action

We've set an ambitious target to reduce the carbon intensity of our global infrastructure at least 10% annually, starting in FY23. Using Carbon to Serve as a metric, we can quickly identify the impact that different data centers, rack groupings, and product clouds have on our infrastructure emissions. This allows us to quickly take action to increase efficiency.

For example, one particular outlier in Carbon to Serve showed us that the automated decommission of some equipment hadn't occurred as planned. We were still using energy to power and cool machines that we weren't actively using, resulting in wasted energy and causing our Carbon to Serve metric to show a significant jump. Monitoring this metric helped us quickly identify the problem and fix it.

What's Next for Carbon to Serve?

Today, we base Carbon to Serve on Salesforce-specific units of work, such as e-commerce pipeline transactions in Commerce Cloud. Our next step is to identify general computing variables that will be more common to other cloud companies and ideally across multiple industries. We're hoping to share what we've learned and contribute to a collective race for IT decarbonization as Carbon to Serve becomes a more transparent and universal way to think about infrastructure efficiency.

**Have an idea about how to knock this out of the park? We want to hear from you!
You can reach us at sustainability@salesforce.com.**





Here's What You Can Do

Because IT infrastructure plays a central role in today's economy, all companies can - and should - play a role in its decarbonization.

If you write or develop code:

- Make that code efficient! This is the single most important starting point for any decarbonization plan. It's the downstream decarbonization strategy with the highest amount of leverage. More efficient code means you can complete the same amount of work with less processing power, fewer servers, less data center space, less demand on regional infrastructure and reduced environmental impact.
- The first step on this journey may be adopting or creating a metric, like our own Carbon to Serve, which helps you measure and quantify the efficiency of your products and services. Ultimately, all of us will benefit from increased transparency about the efficiency of products and services throughout our value chains.

If you build hardware:

- Use life-cycle assessments⁶ and circular economy⁷ principles to minimize GHG emissions and other environmental impacts over the entire product lifecycle.
- Optimize server and other hardware to your company's specific use-case. Make sure you're using the most efficient equipment to get the job done.

If you build and operate data centers:

- Create an offering that attracts the ever-increasing number of customers, suppliers, and partners who have strong climate commitments that extend up and down their supply chains. General contractors, consultants, infrastructure equipment manufacturers, freight and logistics services, public cloud customers - all of these groups and more are looking for ways to reduce emissions.
- Provide granular data on carbon intensity in each data center location over the 24-hour daily cycle.
- Understand your energy profile and shift non-time-critical IT tasks to times of day when your energy supply is cleaner - and therefore less carbon intensive. This will be when there is a larger proportion of renewable energy powering the grid.
- In place of diesel generators, consider low-carbon options for backup power supply to manage grid reliability incidents.

⁶ [Life Cycle Assessment of Dell PowerEdge](#)

⁷ [What is a Circular Economy?](#)



If you use space in colocation data centers:

- Tell your partners and suppliers that you prioritize efficiency and clearly state your preference for carbon-free power in contracts and regular business reviews.
- Regularly increase the efficiency of the hardware you deploy.
- Maximize recycling and promote circular material flows when retiring hardware.

If you leverage the public cloud:

- Ask your vendors for clear and transparent data to make it easier to prioritize providers who offer lower-carbon options. When asking about the carbon impact of the services provided, make it clear that this answer factors into your procurement decision-making.
- Minimize your GHG footprint by selecting lower-carbon regions and times to serve your capacity.



It's Time to Act

The world is in a climate crisis. To avoid the worst impacts of climate change, we must demand and deliver decarbonized IT infrastructure that will help make a 1.5°C future a reality. Learn more about [Salesforce's Climate Action Plan](#) and how to use your voice to make changes in your own company and step up to the urgent challenge of climate change.



Safe Harbor Statement

"Safe harbor" statement under the Private Securities Litigation Reform Act of 1995: This report contains forward-looking statements about the company's financial and operating results, which may include expected GAAP and non-GAAP financial and other operating and non-operating results, including revenue, net income, earnings per share, operating cash flow growth, operating margin, expected revenue growth, expected current remaining performance obligation growth, expected tax rates, stock-based compensation expenses, amortization of purchased intangibles, shares outstanding, market growth, environmental, social and governance goals, expected capital allocation, including mergers and acquisitions, capital expenditures and other investments, expectations regarding closing contemplated acquisitions and contributions from acquired companies. The achievement or success of the matters covered by such forward-looking statements involves risks, uncertainties and assumptions. If any such risks or uncertainties materialize or if any of the assumptions prove incorrect, the company's results could differ materially from the results expressed or implied by the forward-looking statements it makes.

The risks and uncertainties referred to above include – but are not limited to – risks associated with the impact of, and actions we may take in response to, the COVID-19 pandemic, related public health measures and resulting economic downturn and market volatility; our ability to maintain security levels and service performance meeting the expectations of our customers, and the resources and costs required to avoid unanticipated downtime and prevent, detect and remediate performance degradation and security breaches; the expenses associated with our "first-party" data centers and third-party cloud infrastructure providers; our ability to secure additional data center capacity; our reliance on first and third-party hardware, software and platform providers where we do not directly own the infrastructure; the effect of evolving domestic and foreign government regulations, including those related to the provision of services on the Internet, those related to accessing the Internet, and those addressing data privacy, cross-border data transfers and import and export controls; current and potential litigation involving us or our industry, including litigation involving acquired entities such as Tableau, and the resolution or settlement thereof; regulatory developments and regulatory investigations involving us or affecting our industry; our ability to successfully introduce new services and product features, including any efforts to expand our services; the success of our strategy of acquiring or making investments in complementary businesses, joint ventures, services, technologies and intellectual property rights; our ability to complete, on a timely basis or at all, announced transactions, including our proposed acquisition of Slack Technologies, Inc.; our ability to realize the benefits from acquisitions, strategic partnerships, joint ventures and investments; our ability to successfully integrate acquired businesses and technologies; our ability to compete in the market in which we participate; the success of our business strategy and our plan to build our business, including our strategy to be a leading provider of enterprise cloud computing applications and platforms; our ability to execute our business plans; our ability to continue to grow unearned revenue and remaining performance obligation; the pace of change and innovation in enterprise cloud computing services; the seasonal nature of our sales cycles; our ability to limit customer attrition and costs related to those efforts; the success of our international expansion strategy; the demands on our personnel and infrastructure resulting from significant growth in our customer base and operations, including as a result of acquisitions; our ability to preserve our workplace culture, including as a result of our decisions regarding our current and future office environments or work-from-home policies; our dependency on the development and maintenance of the infrastructure of the Internet; our real estate and office facilities strategy and related costs and uncertainties; fluctuations in, and our ability to predict, our operating results and cash flows; the variability in our results arising from the accounting for term license revenue products; the performance and fair value of our investments in complementary businesses through our strategic investment portfolio; the impact of future gains or losses from our strategic investment portfolio including gains or losses from overall market conditions that may affect the publicly traded companies within our strategic investment portfolio; our ability to protect our intellectual property rights; our ability to develop our brands; the impact of foreign currency exchange rate and interest rate fluctuations on our results; the valuation of our deferred tax assets and the release of related valuation allowances; the potential availability of additional tax assets in the future; the impact of new accounting pronouncements and tax laws; uncertainties affecting our ability to estimate our tax rate; uncertainties regarding our tax obligations in connection with potential jurisdictional transfers of intellectual property, including the tax rate, the timing of the transfer and the value of such transferred intellectual property; uncertainties regarding the effect of general economic and market conditions; the impact of geopolitical events; uncertainties regarding the impact of expensing stock options and other equity awards; the sufficiency of our capital resources; risks related to the availability and funding of our bridge loan facility and term loan associated with our proposed acquisition of Slack Technologies, Inc. and other indebtedness; our ability to comply with our debt covenants and lease obligations; and the impact of climate change, natural disasters and actual or threatened public health emergencies, including the ongoing COVID-19 pandemic.

Further information on these and other factors that could affect the company's financial results is included in the reports on Forms 10-K, 10-Q and 8-K and in other filings it makes with the Securities and Exchange Commission from time to time. These documents are available on the SEC Filings section of the Investor Information section of the company's website at www.salesforce.com/investor.

Salesforce.com, inc. assumes no obligation and does not intend to update these forward-looking statements, except as required by law.





Let's get to net zero faster, together.

Start your journey at salesforce.com/sustainability.

