

The Total Economic Impact™ Of IBM And Red Hat For Telecommunications

Forrester found that telecommunications companies that used technologies from IBM and Red Hat together for infrastructure and application modernization accelerated business growth, reduced technology overhead, streamlined IT administration, improved employee experience, and enhanced dependability.

Market Drivers For Telecommunications

The explosion of new technologies, connected devices, and bandwidth requirements is forcing telcos to make significant capex and opex investments to simply stay functional and relevant. Meanwhile, customer expectations are rising even as telcos face increased competition from new communication and networking technologies.

As telcos look to innovate new offerings and improve customer experience (CX), they immediately face an ugly truth: Complex, siloed legacy systems with technical debt and outdated tools have accumulated over decades of change and mergers and acquisitions. Telcos struggle with high employee churn as developers and IT pros grow frustrated with messy, inadequate technologies and culture focused on only “keeping the lights on.”

Telcos must embrace cloud technologies, while acknowledging the hybrid reality of their massive data centers. They must bring cloud tech to existing data center environments and new edge locations, while shifting investment to the cloud for new development and targeted migrations. 5G will accelerate application and services opportunities, and telcos are looking to container-based platforms and deployments, seamless app migration and integration solutions, cloud-based networking, edge computing, and AI for innovation.



ROI
38%



Benefits PV
\$352 million



NPV
\$98 million



Payback
36 months

Total Economic Impact Summary

IBM commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study examining the potential financial impact of using solutions from IBM and Red Hat together in telecommunications. Forrester gathered data from interviews with 15 organizations using solutions from IBM and Red Hat together, 18 other TEI studies examining specific IBM or Red Hat solutions including over 60 interviewed customers, annual reports and financial disclosures for leading publicly traded companies, and Forrester’s comprehensive market research.



33% faster time-to-market.



8-33% reduced app maintenance.



37% freed up labor for administration.



Document Summary

This document is an abridged version of a Forrester Consulting case study commissioned by IBM, titled: “[The Total Economic Impact Of IBM And Red Hat For Telecommunications](#),” June 2020.

To learn more about Forrester’s methodology and findings, read the full study at <https://www.ibm.com/account/reg/us-en/signup?formid=urx-46623>.

Customer Journey

Interviewed telcos faced common pressures, including:

- › Decades of technical debt and M&A that created tangled infrastructures and application environments.
- › Difficulty ensuring performance and availability from legacy infrastructure.
- › Strict compliance and security demands.
- › Poor employee experience (EX) from inadequate tools and slow, manual processes.
- › Inability to hire and retain talent with legacy architecture expertise.
- › Rising customer expectations and the need to support new technologies and trends.

The interviewed organizations searched for partners that could:

- › Combine the value of the data center and the cloud to drive innovation.
- › Deliver dependability with hardware, software, and professional services solutions.
- › Enable successful modernization with industry and technical expertise.

Ultimately, interviewed transportation companies turned to IBM and Red Hat to strategize and successfully modernize complex legacy environments. Using IBM and Red Hat solutions together, customers reduced IT expenditures, streamlined management, and gained greater flexibility and control over infrastructure. Developers released faster and could innovate with new technologies — improving CX and driving business growth.

Financial Model

Forrester used this data to model the Total Economic Impact for a representative *sample telco* from investing in a comprehensive set of IBM and Red Hat capabilities. This *sample telco* earns \$60 billion in annual revenue, employs 75,000 FTEs including at least 400 in IT and 1,500 in development, and it maintains 780 applications across six data centers with 9,600 servers and 19,200 virtual machines (VMs). The *sample telco* conducts a three-year technology transformation in which it:

- › Migrates one-third of its on-premises workloads to IBM cloud.
- › Deploys a hybrid multicloud container platform using Red Hat Enterprise Linux, Red Hat OpenShift, and IBM Cloud Paks in its data centers, IBM Cloud, and a third-party public cloud.
- › Modernizes apps with microservices architecture and leverages containerized services to drive innovation.

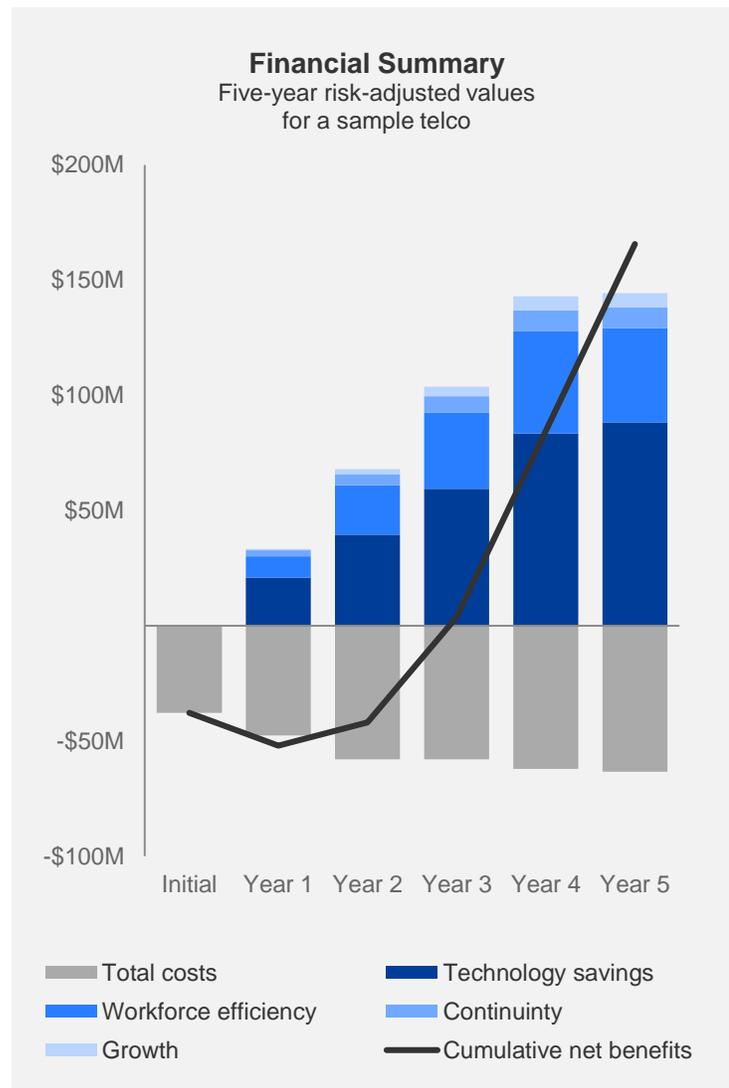
Forrester's TEI model for the sample telco found incremental benefits of \$352 million versus incremental costs of \$254 million over five years, adding up to a net present value (NPV) of \$98 million, a payback period of 36 months, and an ROI of 38%.

“We’re deploying a coherent hybrid, multicloud environment with on-premises data centers that include IBM hardware, IBM Public Cloud, and other cloud vendors — all managed centrally via Red Hat OpenShift.”

Global operations manager, multinational telco

“Our telco product must be absolutely secure and perform at all times. Every data set, every call, every video must be treated as mission-critical. We can't allow degradation or breaches, so we need to design our systems right.”

Head of IT operations, global secure communications and payments company



Benefits Analysis

Forrester modeled risk-adjusted total benefits of \$352 million over five years for the *sample telco*, including the following categories:

Business growth. Interviewed telcos shored up environments using hardware, platforms, and services from IBM and Red Hat to guarantee performance, availability, and dependability, which boosts CX and drives revenue via retention and enrichment. Transformation with IBM and Red Hat enabled developers to release equivalent capabilities more quickly, with more frequent incremental updates delivering value to customers earlier. The investments also enabled developers to connect all their existing data to mine and capitalize with new data models and new applications. Combined with new capabilities driven by packaged services from IBM and Red Hat catalogs (including AI, blockchain, and IoT), it ultimately generated additional business growth. For the *sample telco*, platform-driven CX and dependability reduces the 1.1% annual customer churn by 1% while the launch of six new customer-facing apps drives a 20% upsell in monthly charges for 0.05% of customers per application. In total, the *sample telco* earns an additional \$70 million in revenue (\$13 million in operating income) over five years with improved CX and new apps.

Technology savings. Investments in cloud migration plus platform and app modernization allowed interviewed companies to eliminate data center operational costs, control cloud spend and licensing, and scale to meet peak demands. Organizations benefited from improved cash flow as they replaced upfront hardware and license purchases with usage-based subscription costs, while also reducing risk of vendor or infrastructure lock-in. Cost savings were linked with equivalent or better security, compliance, performance, and dependability across environments. The *sample telco* reduces \$208 million in technology costs over five years by:

- › Saving \$52 million by migrating on-premises workloads to IBM Cloud.
- › Reducing on-premises and cloud resource consumption by 20% with containerization and platform management using Red Hat OpenShift and IBM Cloud Paks, saving \$42 million in hardware refresh and operational costs and \$31 million in cloud costs.
- › Preventing 15% in excess infrastructure to handle peak loads by using IBM Cloud, avoiding \$23 million in potential costs.
- › Reducing resource requirements by 30% by refactoring and modernizing apps with microservices architectures and prepackaged cloud services, saving \$17 million.
- › Trimming software license costs by 15% for containerized apps and by 35% for apps refactored with modern architectures, saving \$38 million.
- › Diminishing risk of lock-in to rising costs, avoiding \$6 million in cost increases.

Developer efficiency. Red Hat Enterprise Linux, Red Hat OpenShift, and IBM Cloud Paks formed a cohesive platform for development, deployment, monitoring, and management across hybrid multicloud environments. Complexity was abstracted, code was broken down into simpler isolated elements, and integrated services were consumed in prepackaged containers — helping developers to create and maintain apps more quickly and allowing administrators to automate and streamline processes from deployment to spin-down. The *sample telco* recaptures \$58 million over five years in additional productivity for 1,500 developers by:

- › Accelerating development by 33%, cutting per-app timelines from 36 to 24 weeks.
- › Decreasing annual maintenance labor by 8% for containerized legacy apps.
- › Reducing annual maintenance labor by one third for apps modernized with microservices architecture and prepackaged IBM and Red Hat services in containers.

“Working with IBM and Red Hat is cheaper, better, and faster. We can use any server and environment, which lets us be open, efficient, and flexible.”

*Chief technology officer,
multinational telco*

“By deploying our hybrid cloud platform [built with Red Hat and IBM], we gained the opportunity to delve into markets and industry segments that weren't on our radar before. It let us specialize in new ways and monetize more things. Overall, it increased our revenue.”

*Head of IT operations,
secure payments and
communications*

“Red Hat gives you efficiencies, management, open source, and automation. It all comes with it. OpenShift helped sell all of IBM's portfolio, because it is letting us use many component pieces and use them tighter and better integrated.”

*Global operations
manager, multinational
telco*

Operational efficiency. The consolidated IBM and Red Hat platform delivered benefits of cloud and open source across hybrid multicloud infrastructure with enterprise-grade dependability, security, and compliance. IT teams freed themselves of burdensome, complex processes and instead relied on centrally enforced governance with preapproved, prepackaged containers for services. Specialized teams could now more easily share workloads, and employees were freed to work on more enjoyable, value-add work. The *sample telco* reallocates 146 of 400 IT admins to save \$35 million over five years by:

- › Reallocating 10% of infrastructure admins for data centers using the IBM and Red Hat platform and reallocating all infrastructure admins for hardware migrated to the cloud.
- › Reallocating 70% of middleware admins by using prepackaged containerized services from IBM and Red Hat catalogs.
- › Boosting productivity for platform and operations administrators by up to 40% with streamlined monitoring, management, and automation in a single hybrid multicloud solution with improved UX.

Hiring and retention. Telcos faced particularly high employee attrition and struggled to find specialists to work on niche and outdated technologies, making it was difficult and expensive to attract employees to work in the industry. Employee attrition created significant risk as telcos not only lost technology expertise, but also expertise in their company’s specific intricacies. By implementing modern tools, architectures, and infrastructures, companies could now access a larger workforce that had skills in these areas. Modern, consolidated solutions and improved efficiency also improved EX, making it easier to attract, hire, and retain employees. The *sample telco* reduced hiring costs by 10% for IT admins and developers and boosted retention by 5%, saving \$14 million over five years.

Dependability. Organizations significantly improved dependability by modernizing with IBM and Red Hat, accessing enterprise-grade versions of open source technologies and leveraging robust hardware, cloud, and platform offerings. IBM Cloud provided high-performance, secure, dependable infrastructures to run applications and store data. Meanwhile, Red Hat Enterprise Linux (RHEL), Red Hat OpenShift, and IBM Cloud Paks provided platform services to connect infrastructures, data, and apps with consistent monitoring and management to catch, fix, and prevent issues to ensure availability, performance, and resiliency. The *sample telco* slashes unplanned downtime by 95% within the IBM and Red Hat environment, reducing downtime remediation costs, support costs, and customer refunds by \$24 million over five years.

“We are now more agile to deploy new products and offerings to our customers with this hybrid cloud solution. We can deploy new version releases faster. We can increase functionality. We can make our solutions more robust. And, on top of that, we have all our employees working together with this platform and [DevOps], and it’s improving the culture of our company with a different way of working.”

Chief technology officer, multinational telco

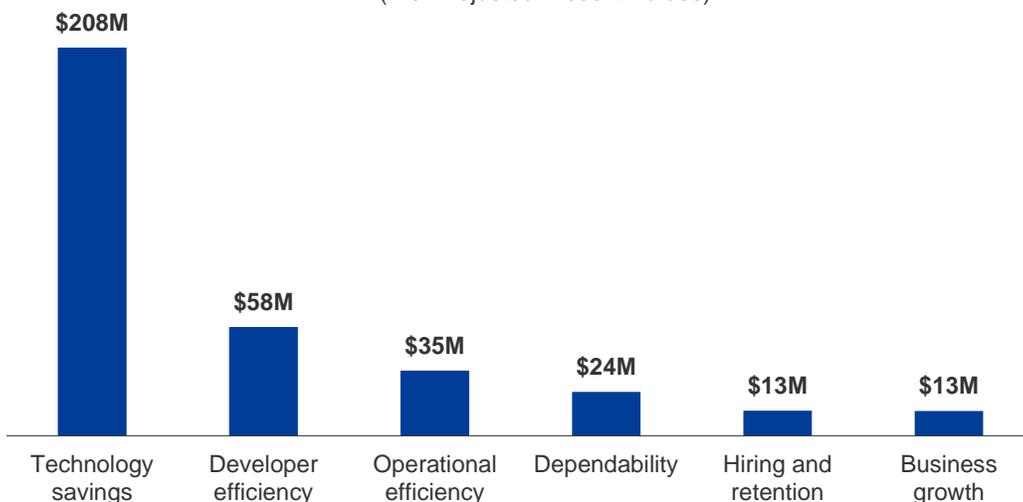
“We’ve had catastrophic failures. We know what downtime means. We lost customers, we had to give away [our offerings] for free, and we wasted excess labor.”

Product manager, telco equipment and services

“We’re using IBM servers, IBM Cloud and public clouds from [two different third parties] with Red Hat Enterprise Linux, Red Hat OpenShift, IBM Cloud Pak for Multicloud Management, and IBM Cloud Pak for Data across the whole environment. We literally could not function without IBM and Red Hat working across it all.”

Head of IT operations, secure payments and communications

Five-Year Benefits For The Sample Telco
(Risk-Adjusted Present Values)



Unquantified benefits. IBM and Red Hat helped customers employ DevOps and agile processes to release updates more frequently in smaller components and to meet business goals such as 5G adoption and disaster preparedness with new technology. IBM and Red Hat also strengthened application and infrastructure security and helped to meet and report on stringent regulatory compliance needs. Finally, IBM and Red Hat enhanced employee efficiency for data, security, and support teams, improving EX and culture along the way.

“We’re looking at integrating data, using AI and machine learning for voice recognition, and finding useful insights for us and our customers.”

Product manager, telco equipment and services

Flexibility Analysis

Customers gained flexibility and agility to respond to disasters and ensure business continuity, to do more with less, quickly adapt, reallocate resources, and innovate. They gained innovation opportunities by leveraging the broad catalogs of IBM and Red Hat services and by testing new AI, machine learning (ML), blockchain, and internet of things (IoT) capabilities, all while reducing their risk of proprietary technology lock-in by using leading open source components like Linux, Kubernetes, Knative, and Istio.

Costs Analysis

Forrester modeled risk-adjusted total costs of \$254 million over five years for the *sample telco*, including:

- › Technology costs of \$144 million for IBM cloud and the IBM and Red Hat platform to host and run 225 applications migrated from on-premises environments.
- › Professional services costs for Red Hat Container Adoption Program and IBM Services totaling \$49 million for transformation strategy, planning, and implementation, and \$21 million for ongoing management, support, and enhancement.
- › Training hours valued at \$40 million with each developer and IT administrator completing four weeks of initial training and one week of annual training for the new technologies, platforms, tools, languages, hardware, and processes.

“Artificial intelligence and machine learning will give us more value out of our infrastructure through predictive analysis and automation. Our infrastructure will get smarter, and we’ll have a better understanding of how it’s working in real time.”

Global operations manager, multinational telco

Risks Analysis

Forrester has integrated an evaluation of risks and variability into all calculations in this financial analysis. Measuring and proving the impact of an expansive transformation (including hardware, cloud, software, and professional services) is unsurprisingly complex, with many influencing factors such as legacy environment, use cases, selected solutions, industry, region, size, and market trends. Forrester’s financial analysis is a conservative representation of reported impacts from interviewed organizations. But, ultimately, results will vary significantly by organization. Please see the full TEI study for more details.

This document is an abridged version of a case study commissioned by IBM, titled: “[The Total Economic Impact Of IBM And Red Hat For Telecommunications](#),” June 2020. Forrester took a multistep approach to evaluate the impact of IBM and Red Hat solutions, including interviews with 15 organizations and review of 18 recent TEI studies, Forrester’s market research, and financial disclosures and annual reports for leading public companies in three industries. Forrester constructed a composite organization and aggregate financial analysis based on interviewed organizations, and risk-adjusted the financial model to account for uncertainties in estimates.

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