

QTS

THE POWER OF DATA IS REALIZED WITH IT ORCHESTRATION

*Data-Driven Cultures Revolutionize
Enterprise Landscape*

ABSTRACT

Enterprises have long realized the value of moving their organizational operations into the digital realm. A future-proofed data center strategy is the key to bridging the gap between gathering data and understanding data.

To meet this demand, data center providers are innovating to further deliver on the value of virtual back-ups, instantaneous communication capabilities and advanced operational insight and efficiency. As the role of IT expands within organization's, leveraging data intelligently has the power to drive business innovation with invaluable analytics that are rooted in your organizations data footprint.

As we usher in a new era for IT, the next frontier for data centers is big data analytics. CEOs and CIOs are now ready to put their data to work. The implications of how data-driven decision making can revolutionize the way we do business are vast. The volume of data generated by today's enterprises is expansive and IT decision makers must convert this raw data into actionable insights in near real-time. This need has created demand for a new driver of innovation: **IT orchestration.**

INTRODUCTION

Data is becoming increasingly valuable to organizational leaders as they make critical operational decisions and attempt to optimize performance. Every business function, not just information technology, produces an exponential number of data points throughout the course of a week, even a day. That data is constantly telling a story about how the organization is performing, from operational aspects related to physical infrastructure to personnel performance and productivity.

But the story written by this data is not recorded in a language that is easily read by computers or people. **This raw data is generated from multiple sources and each data set is as diverse as its source.** The story is obfuscated by this complexity and diversity, with important parts hidden in separate, unique siloes. CIOs, CTOs and IT leaders have recognized the immense opportunity to revolutionize operations if they can access and integrate these insights to apply key learnings to

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overarching business strategies. Researchers at MIT have found that publicly traded firms that practice data-driven decision making experience yield and productivity at a rate that is 5-6% higher.¹ As organizational leaders plan for the future, they are looking to build “data-driven cultures.”²

Yield and productivity increases 5-6% with data-driven decision making. – MIT

Furthermore, as digital footprints become larger and more complex, data is invaluable when managing IT infrastructure. It can reveal issues before they cause disruption, identify gaps in security or management and even help organizations identify ways to reduce their carbon footprints. IT teams also understand the impact data can have on innovation across an entire organization. With access to more data, decision makers in every department, from accounting to logistics, can find ways to support their strategies. But if all of that data is locked behind a seemingly unintelligible collection of data points, how can IT professionals drive efficiency and innovation? The answer is a fully-integrated IT orchestration platform.

FROM RAW DATA TO BIG DATA

THE EXPLOSION OF RAW DATA

The term raw data has gained tremendous traction in recent years. Dominating book titles, news headlines and conversations in and out of the IT industry, the explosion of raw data has been a transformative force in how IT is provisioned for, managed and utilized. In this paper, we rely on the definition of raw data that describes it as *source data*. Source data is defined as “data that has not been processed for use.”³ *TechTarget* emphasizes that this data cannot yet be characterized as “information,” but rather as having the potential to become information after extraction, organization and analysis.³ After collection, this potential information is stored in a data lake and becomes big data. Gartner defines big data as “high-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making and process automation.”⁴

THE BUSINESS IMPLICATIONS OF BIG DATA ANALYTICS

The explosion of raw data and the presence of ever-expanding pools of big data has precipitated the arrival of big data analytics. Big data analytics are how organizations scale processes to access the insights offered by massive amounts of raw data.

When applying a big data analytics methodology, a machine can examine a variety of data inputs, including readings on power utilization, communication activities, user behavior, storage space, security, hardware performance and personnel productivity to identify patterns, trends and changes.

However, this process presents a variety of challenges. As companies expand their IT footprints and enhance how their infrastructure supports their business, the amount and diversity of raw data pulled from these systems has increased. The pool of big data that must be mined and converted into actionable data gets larger by the minute and the amount of compute and resources required to scale big data analytics systems is immense.

ENTERPRISES FACE CHALLENGES: DIVERSE DATA SOURCES LEAD TO SILOED RAW DATA

There are five key categories of data sources: data center infrastructure management, hybrid IT, business support systems, operational support systems and external integrations/web services. Each category of data is generated in a siloed manner, leading to disparate and disjointed collections of data that do not relate to one another.

In order to apply big data analytics to these data sources and convert these readings into actionable information, that data must be pulled from their siloes and aggregated, which *The Economic Times* recently highlighted as the premier challenge in big data analytics.⁵ The article also highlighted another key hurdle enterprises face, “Turning raw data into useful information is difficult as it requires the application of business rules and complicated process.”

The complexity associated with creating useful information has driven innovation in the data center landscape. CIOs and CTOs have turned to data center providers to build advanced platforms that support their need for big data analytics. These platforms are the vessel for next-generation IT orchestration, but first the data must be collected, amalgamated and normalized in a central location. This is known as the logical tier.

THE LOGICAL TIER: THREE KEYS FOR UNLOCKING THE POWER OF DATA

At the foundation of every IT orchestration platform’s capabilities is the logical tier. Logic drives a platform’s ability to evolve, scale and learn. Logic is the process by which data is transformed into information and is the driving force behind how IT can impact organizational operations and objectives.

Data enters the logical tier and undergoes this transformation during three phases: **data extraction**, **data transformation** and **data load**.

DATA EXTRACTION

When a data source produces a data point, data extraction logic communicates with physical or virtual systems to request the raw data generated by that entity. Data from these sources is streaming, or constantly being updated, requiring the data extraction logic to run in tandem to the data source and export all data points in near real-time. When understanding the role data extraction plays in the logical tier, consider power utilization analytics. Every reading produced by a circuit contains raw data that can be converted into actionable insights. But first each reading must be pulled from a distinct device. *This is data extraction.*

DATA TRANSFORMATION

After the data is extracted from a source, it still remains in a raw format and must be associated, or digitized. Data transformation is the process by which the data is configured for storage through the application of

association rules that mold the raw data into a format that is compatible for the target database. *The transformed data is now meaningful and ready to aggregate.*

DATA LOAD

Finally, after the data is extracted and transformed, it is then ready to be loaded into the database. This is the function of the data load logical system. Data load is not just the process by which data enters a database, it is also how that data is categorized and stored. This logic must warehouse meaningful data points in a way that allows the IT orchestration platform to comb through high volumes of data and find relevant data with low latency. *The final product is organized, aggregated and meaningful data.*

Once raw data has moved through the logical tier, it is ready to enter an IT orchestration platform, where it will then be analyzed to produce valuable business intelligence.

INTEGRATED ANALYTICS: BUSINESS INTELLIGENCE IN THE HYBRID ERA

HYBRID IT TRANSFORMS IT MANAGEMENT

Hybrid IT has transformed IT strategies in every industry. According to Gartner, hybrid IT “is the result of combining internal and external services, usually from a combination of internal and public clouds, in support of a business outcome.”⁶ Environments are becoming increasingly complex and heterogeneous, requiring a more integrated approach when securing solutions, strategies and support.

The Great Cloud Shift has accelerated adoption of hybrid models and data center and cloud service providers are playing an increasingly more involved role in how organizations build their IT strategies. This enhanced role includes providing IT orchestration and service delivery platforms. Modern IT orchestration platforms help organizational leaders move beyond making decisions based on historical data and empower them to make **real-time** decisions driven by on-demand access to meaningful data. These platforms are revolutionizing the visibility and control IT professionals can leverage when managing their hybrid environments, but this enhanced access is entirely dependent upon advanced integration capabilities that break down data siloes and create master data or “a single source of truth.”⁷

In order to create master data that informs operations, IT orchestration platforms must pull raw data from all of the five key data sources, offering holistic insight into performance and utilization. These analytics can come in the form of:

- | | |
|-------------------------------|-----------------------------|
| + Mathematical Expressions | + Management Science |
| + Infrastructure Availability | + Infrastructure Statistics |
| + Pattern Recognition | + Mathematical Modeling |
| + Machine Learning | + Data Mining |

These analytics are then loaded into a management portal. This portal displays near real-time insights in a convenient, consistent and easy-to-understand presentation that reveals trends and patterns while uncovering hidden opportunities and problems.

Gartner describes “cost savings, optimized time to production and simplified operations” as the fundamental motivations driving adoption of integrated systems.⁸ Experts at Gartner forecast that the improved efficiency offered these systems will reduce spend on servers and storage by 25% by 2020.⁸

“Cloud-based management services for datacenters will begin to transform manual on premises approaches into remote, data-driven ones” – 451 Research⁹

THE GAME CHANGER: AUTOMATION, ACCESS AND APIs

True operational efficiency is driven by an orchestration platform’s ability to automate IT management. All of the patterns, trends and opportunities revealed through the analysis process lead to actions and transactions that a manager can take to improve performance.

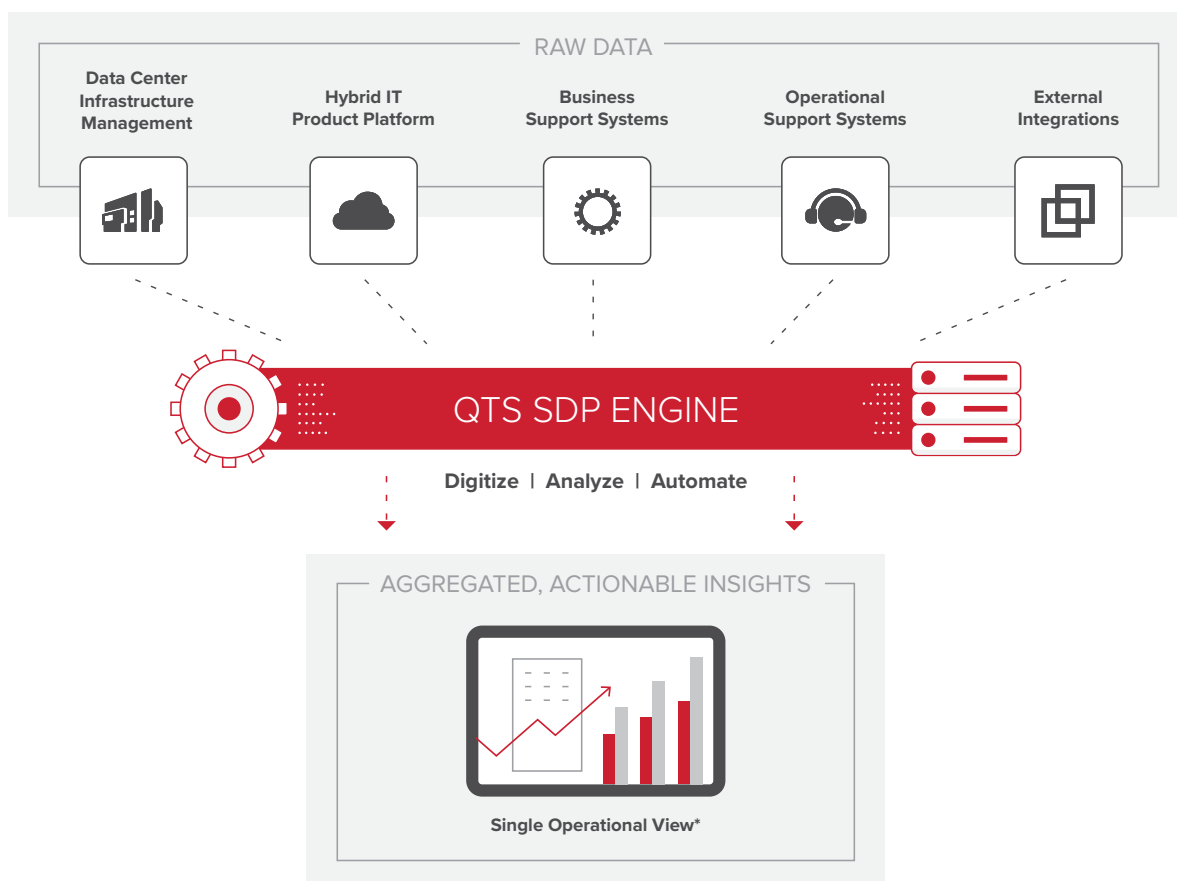
The key to orchestration is access. In today’s fast-paced IT world, teams need immediate visibility into their analytics and insights. A key component of immediate access is having the flexibility to view key aggregated data anytime, anywhere and from any device. Today’s IT decision makers need to be nimble and are required to make sophisticated decisions more quickly. Convenient access to all of their data on the web and on mobile devices is critical.

Lastly, every enterprise has complex and unique needs and infrastructures. Publishing APIs empowers IT teams to integrate internal and external data sources with ease. APIs are a key form of integration that connect enterprises applications and software systems to their IT orchestration platform.

AN INDUSTRY STANDARD FOR IT ORCHESTRATION

QTS recognized the demand for advanced IT orchestration as more and more of our customers have embraced the hybrid methodology. As we partner with IT leaders in every part of the “hybrid journey,” we understand that a big data approach is vital to offering next-generation integration, visibility and control across customers’ physical and virtual environments.

The QTS Service Delivery Platform is the industry’s first fully-integrated service delivery and IT orchestration platform, purpose-built for hybrid IT. Our expert team has built this platform from the ground up to offer unprecedented visibility and access to performance, business and operational support data in a single operational view. QTS shares all data points collected from environments with our customers, offering the highest levels of transparency into IT performance. We are committed to providing our customers a holistic view into their entire environment and the QTS SDP delivers on this promise by pulling raw data from all five key data sources:



*Easily accessed through QTS Customer Portal, QTS Mobile App or via API.

QTS customers can now access and interact with raw data that has passed through our advanced logical tier and has been converted into meaningful, aggregated data.

With QTS published APIs, IT managers get streamlined, flexible access to the unprecedented functionality and analytics offered by the Service Delivery Platform. For example, whether an enterprise requires API access that integrates with their internal badge approval process or is looking to load the SDP's insights into third-party applications like Tableau or Salesforce, SDP can load near real-time data into these visualization tools. This advanced level of customization enables IT managers and decision-makers to maximize return on investment and by aggregating this data from SDP with all of the data that exists within their entire digital footprint.

Through the QTS Service Delivery Platform, aggregated data is available on-demand in the form of actionable analytics. In a centralized presentation that is continuously updated with real-time normalized data, QTS offers customers the ability to orchestrate actions, order services and provision resources. This helps streamline hybrid IT management by improving efficiency and return-on-investment while de-risking how users manage multiple hybrid workloads.

Beyond streamlining IT management, the high-value insights offered by the QTS Service Delivery Platform are driving conversations and strategies regarding innovating to move wider organizational goals forward. Rather than drowning in a torrent of data or making decisions based on historical data that is not relevant to current decisions, every team member – from the C-suite to any level of the enterprise - is empowered to access data that is current and use those insights to innovate.

CONTRIBUTORS

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QTS Realty Trust, Inc. (NYSE: QTS) is a leading provider of secure, compliant data center, hybrid cloud and managed services. QTS features the nation's only fully integrated technology services platform providing flexible, scalable solutions for the federal government, financial services, healthcare and high tech industries. QTS owns, operates or manages more than 5 million square feet of data center space and supports more than 1,100 customers in North America, Europe and Asia Pacific. In addition, QTS' Critical Facilities Management (CFM) provides increased efficiency and greater performance for third-party data center owners and operators. For more information, please visit www.qtsdatacenters.com, call toll-free 877.QTS.DATA or follow us on Twitter @DataCenters_QTS.