

# MANHATTAN ACTIVE® PLATFORM TECHNOLOGY

## WHAT IS A FUTURE SYSTEM?

Future systems<sup>1</sup> are boundaryless, blurring the connections between data, applications and infrastructure, between humans and machines, and between organisations and industries. Future systems are scalable and adaptable, agile enough for business and technology change, with flexible architectures to protect and utilise data. And future systems adapt to humans, empowering people to quickly and simply interact with machines.

At Manhattan Associates, we have invested in innovation to develop systems capable of providing manufacturers, distributors and retailers an agile path to the future.

Manhattan Active® platform technology is the culmination of that effort and the foundation of future systems like Manhattan Active Omni, Manhattan Active Warehouse Management, and Manhattan Active Allocation.

All Manhattan Active solutions are cloud-native, completely assembled from microservices, and automatically scale to meet performance demands. They are completely extensible at the data, services and interface levels, and they are versionless, receiving continuous access to new innovation in regular releases.

And they never need upgrading, so they are the last solutions you will ever buy.

## CLOUD-FIRST AND 100% MICROSERVICES

Manhattan Active solutions are all born in the cloud. They are designed to be cloud-first solutions that leverage all the scalability and power of mature cloud platforms like Manhattan Active Cloud, powered by the Google Cloud Platform. With Manhattan Active, there are no more servers to buy, software to maintain or systems to tune.

As cloud services have evolved over the past two decades, so have the underlying information-technology architectures. Service-oriented architectures (SOA) emerged as the preferred strategy to develop enterprise software systems because they support an adaptable and reliably scalable solution to meet changing business and user needs. The latest incarnation of SOA is known commonly as “microservices,” finally providing a complete foundation for building and delivering extensible and adaptable software solutions.

Manhattan Active solutions are comprised entirely from microservices. The functional components of supply chain and commerce solutions such as “customer,” “order” or “shipment” have been broken down to their base levels of capability. They are completely self-sufficient, including their data structure, so there is never a need to depend upon a monolithic database across the application. The microservices also communicate with each other and to outside systems through over 40,000 application programming interfaces (APIs), exit points and user interface extension points throughout the Manhattan Active solutions.

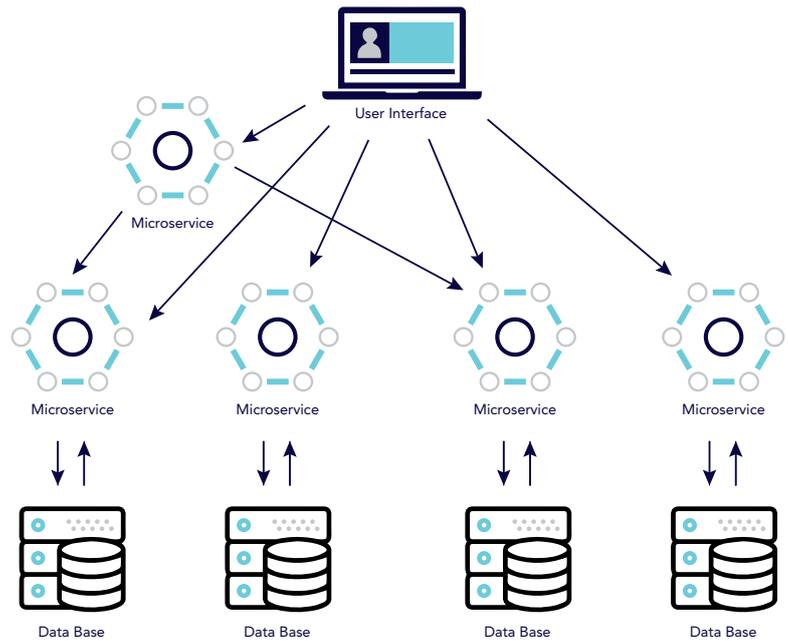
“Microservices enable unprecedented agility and scalability. Using microservices, organisations can build and deploy individual application features as soon as they are ready, and scale just the parts of an application that cause bottlenecks.”

— Innovation Insight for Microservices, March 2019  
Gartner

## MONOLITHIC ARCHITECTURE



## MICROSERVICES ARCHITECTURE



Because each microservice component is independent, there is no duplication of capability across near-neighbour offerings, such as order management, point of sale or customer relationship management. Instead, those capabilities can be offered as a single, unified commerce platform, where a single "order" or "customer" component is used and re-used regardless of which user or system is accessing it during the buyer journey. In the warehouse, a single "task" component is utilised across a unified offering of pick, pack, sort, slot and put-away functions.

Microservices enable Manhattan Active solutions to be "containerised" using industry standard solutions like Docker, MySQL and Elastic to unlock tremendous scalability and resiliency.

Manhattan Active solutions also eliminate downtime, even when receiving regular updates. When new features are introduced or new extensions are needed, the affected services or data constructs can be quickly and simply changed, with zero impact to the many other components that are currently working well.

## VERSIONLESS

Simply put, by giving our Manhattan Active platform a versionless nature, it means never having to upgrade again. No scheduled downtime for major upgrades. Just imagine the kind of human and capital resources expended on a significant upgrade of enterprise or supply chain software. Our clients are able to repurpose all that energy and cost toward creating better experiences for their customers and their associates.

Manhattan Active solutions are always on the current version. We give every feature a switch that can be turned on and off. When new capabilities are made available, our clients can decide whether to turn on the new feature or not; either way, it is up-to-date and available, whenever they are ready.

In just 2019, Manhattan Active Omni saw four quarterly releases that introduced dozens of new capabilities and innovations. And in 2020, Manhattan Active Warehouse Management and Manhattan Active Allocation will join the party. New innovations come from market research and client requests and from our research-and-development, data science, industry and product teams. The results are future solutions that are agile, adaptable and ready for whatever comes next.

## ELASTIC

Traditional software architectures, as opposed to microservices ones, tend to be monolithic in nature. They usually are made of large functional chunks of capability, which become difficult to break apart if only one component is useful elsewhere. They are unwieldy, inflexible and expensive to change. Think about the difference between a boulder and a stack of bricks. They can both provide the same level of support or protection, but one is infinitely more adjustable, adaptable and reconfigurable than the other. Which brings us to the problem of elasticity.

Legacy, boulder-like applications pose a significant challenge when it comes to performance scalability and support for peak demand. When it's time to increase capacity for performance, it's hard to do that with a boulder, but it's fairly easy to add more bricks to the stack.

The Manhattan Active platform uses advanced load-balancing tools, such as Kubernetes engines, to deliver both vertical and horizontal elasticity. It's designed to flex automatically, with no human intervention or oversight, to match the changing real-time needs of the business.

Because the platform is cloud-native, the architecture is entirely composed of microservices. When the system needs more volume for particular services, it automatically increases the number of containers activated for that specific capability. For example, during the holiday season an omnichannel retailer often needs more order-taking capacity during the Black Friday period. Or during the recent COVID-19 pandemic, essential goods distributors may have had a sudden spike in demand for inventory synchronisation. Manhattan Active solutions can automatically increase capacity to meet the needs and then reduce it again when demand subsides.

The platform supports seamless horizontal elasticity as well. Through the year, and even different times of day, the number of users logged into an application can vary, sometimes significantly. Manhattan Active solutions have the architecture needed to handle as many users as necessary on the system. Legacy architecture models require expensive consultation and fine-tuning to handle the performance impacts of increased users, but Manhattan Active solutions do so without any additional resources required.

## EXTENSIBLE

Here at Manhattan Associates, we have spent the last 30 years listening, learning and working with our clients to become the most experienced supply chain execution company in the world. And that experience helps us understand that, regardless of how capable the software we develop is, it must be extensible, because our clients' services and their supply chains are what make them unique. The ability to customise, adapt and evolve is what differentiates them from their competition.

So, the Manhattan Active platform makes it simple for our clients to combine their innovation with ours and create truly unique experiences for their customers.

There are some monolithic systems, and even some rudimentary cloud approaches, that allow for changes by the customer. They are usually work-intensive, and the customisations are almost never transferable when new versions of the core software are made available, at least not without significant amounts of regression testing time and cost.

Think about the difference between Play-Doh and Legos. When mixing two or three colors of "functionality" together into a single entity with the monolithic architecture of Play-Doh, it becomes nearly impossible to extract a particular function in the future to mix with the next creation. But Legos are componentised, making it simple to unsnap a particular function and reuse it in the next creation.



With Manhattan Active solutions, extensibility is fundamental. Clients are able to create extensions at every level of the platform – the data model, services and even the user interface – without any effect to the base solution. And, when there is an update to the base solution, those extensions are completely compatible with the updated version.

The Manhattan Active platform offers thousands of REST APIs and WebHooks that can be used to incorporate custom logic or enhance experiences to best fit the needs of the people using the applications. The extensions themselves can be developed in any programming language and deployed on any cloud platform, as long as they adhere to the JSON contract established by the API within the Manhattan Active solution. As business operations evolve, you can easily make changes to existing extensions, introduce new extensions or remove old extensions without any impact or downtime.

The Manhattan Active platform includes ProActive™ as well, a set of developer documentation, configuration tools and processes to easily configure new extensions and manage any extension through its life cycle.

## SECURE

The Manhattan Active platform utilises some of the highest-level security standards, including authentication based on industry standard protocols like OpenID and SAML, a sophisticated role-based authorisation mechanism and data protection in-transit and at rest. Manhattan Associates is committed to meeting or exceeding current industry standards through periodic penetration testing and auditing so our clients' and their customers' data is always secure.

Manhattan Active solutions are the first future systems for commerce and the supply chain to ensure the next solution you buy will also be the last you ever buy. Contact us today and learn how you can take the first steps into your future.

## PUSH POSSIBLE®

<sup>1</sup> <https://www.accenture.com/us-en/insights/future-systems/future-systems-index>