

Critical Service Mapping at Scale

The art of service mapping for enterprises operating in highly regulated environments.

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“The effectiveness of Service Mapping begins with choosing the right approach—a decision that goes beyond technical considerations to become a strategic imperative. By aligning the mapping methodology with the unique characteristics of your applications, you lay the foundation for accurate insights, operational resilience, and business-driven IT success.”

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The Art of Service Mapping

At Synechron, we recognise that accurate, timely, and well-structured service mapping is critical to maintaining a robust technology infrastructure that effectively supports business operations. When combined with CSDM-based service portfolio modelling, service mapping goes beyond a static inventory of IT assets—it provides a dynamic blueprint that illustrates how technology enables business processes and capabilities. This creates a single, reliable source of truth within the Configuration Management Database (CMDB), ensuring a clear and trustworthy representation of services and their underlying infrastructure.

IT services must remain closely aligned with business objectives to ensure their value is understood and maximised. However, this alignment often erodes over time, leading to longer incident resolution times and unintended service disruptions from managed changes. When organisations experience these challenges, they typically turn their attention to the quality and accuracy of their service mapping. By establishing clear relationships between technology assets—such as servers, databases, and applications—and the business systems they support (for example, HR portals or e-commerce platforms), organisations can ensure their technology investments directly support strategic goals.

A well-structured service map is foundational to effective change and incident management. Enhanced visibility into dependencies allows organisations to assess the potential impact of incidents and planned changes more effectively, accelerating approvals and ensuring the right teams are engaged quickly. This proactive approach reduces service disruptions, speeds up root-cause analysis, and strengthens overall operational resilience. Beyond IT operations, service maps also play a crucial role in cost optimisation, business continuity planning, crisis management, and strategic technology investments, helping enterprises build a more agile and resilient digital landscape.

Choosing a Service Mapping Method

ServiceNow provides a comprehensive set of tools to support service mapping, but experience consistently shows that some methods are more effective than others, particularly in the highly regulated, complex, and secure environments found in sectors such as financial services. There is no universal solution to building service maps, but with the right preparation, governance, and best practices, the process can be significantly streamlined.

Synechron continually reviews and refines service mapping approaches, ensuring alignment with industry best practices and emerging trends. This is especially important for large enterprises operating across hybrid environments, where a mix of on-premises and cloud infrastructure adds to the complexity of maintaining accurate service maps.

The success of a service mapping initiative depends on selecting the most appropriate approach for each application or service. A thorough understanding of the technology stack, infrastructure, and configuration is essential, as is an appreciation of the complexity of the application itself. Highly interconnected or legacy systems often require the flexibility of pattern-based mapping, whereas modern, less complex applications may benefit from the efficiency of tag-based methods. Choosing the right approach ensures service maps remain accurate, maintainable, and aligned with operational and business objectives.

“For mission-critical services, accuracy and reliability in mapping are paramount.”

Service Mapping Methods

Pattern Based	Tag Based	Dynamic CI Group	Manual
Best fit for mission critical application services and for on-premise and legacy applications. Precise mapping through discovered connections. Resource intensive to set up and troubleshoot.	Best fit for cloud native and virtual machine environments where process relationship is not required. Quick to set up, can automate through tag service families. Requires robust tagging governance to be successful.	Best suited for mapping Cis to Services that belong to a specific technology stack or share similar attributes. Build using CMDB Groups. No visual map produced, just a list Cis.	Best suited for small application services or mainframes that do not change much and have high availability. Allows for precise mapping using and CI class. High manual effort involved in creating and maintaining application maps.

Business criticality is another vital consideration. For mission-critical services, accuracy and reliability in mapping are paramount, often necessitating a more robust and detailed approach. Other factors, such as the frequency of changes to the application, the availability of skilled resources, and the desired level of automation, should also influence the decision-making process. Let's look at the main service mapping options in more detail:

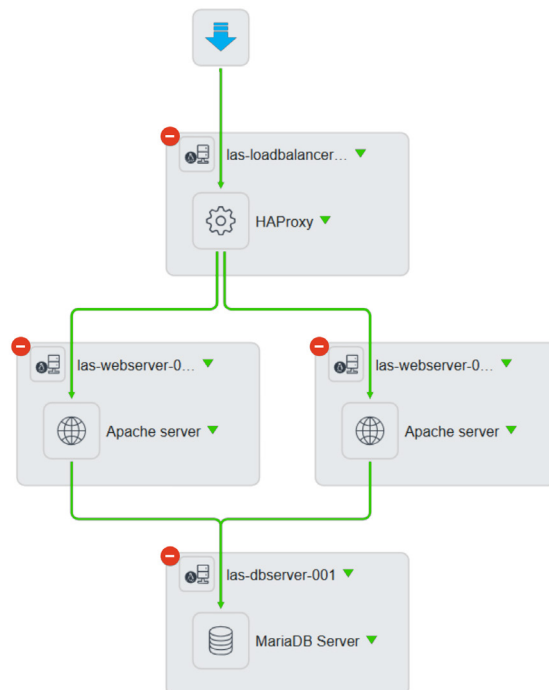
1. Pattern-Based Service Mapping

Pattern-based service mapping provides a precise method of mapping an application service. The result is a service map which identifies the connections between components.

Top-down service mapping requires extensive effort and training to align a discovery tool with the organisation's infrastructure. Teams must overcome security and firewall barriers while contending with a variety of application architectures, making the process both complex and time-consuming.

A key dependency is deep application knowledge, such as where configuration files reside and how the software is deployed — information that can be difficult to compile in large or highly outsourced organisations.

Because of these factors and the fragmented ownership typically found in large enterprises, successful large-scale implementations of top-down mapping remain relatively rare in financial services.



Despite these challenges, top-down mapping can be effective under the right conditions. Environments with standardised, off-the-shelf software and robust, up-to-date architectural diagrams reduce the guesswork required. Having clear and accurate documentation not only minimises trial-and-error but also streamlines the entire mapping process, enabling organisations to make more efficient use of their discovery tools.

Additionally, layering in native machine learning technology can complement pattern-based service mapping through the automated identification of entry points and meaningful traffic-based connection suggestions based on discovered data.

2. Tag-Based Service Mapping

Tags, when governed carefully and applied consistently, can offer both speed and simplicity in mapping an application—sometimes completing the process in just one afternoon. Because tags can be used to group configuration items (CIs) based on environment, application, or other critical attributes, this method scales effectively, particularly in large and diverse organisations.

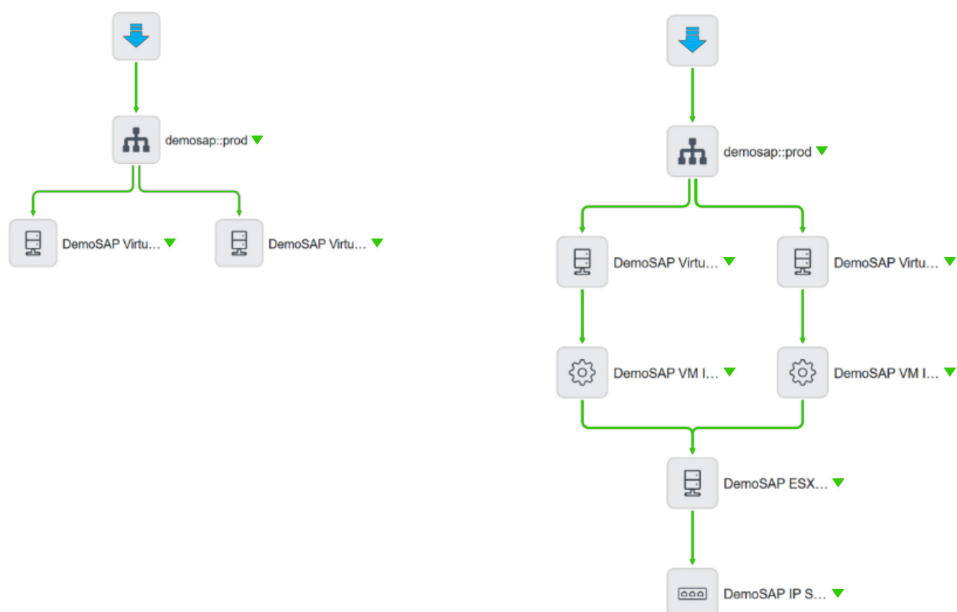
To reap these benefits, however, organisations need strong tag governance. Clear standards and policies must be enforced across both cloud and on-premises environments. Equally important is organisational buy-in; cloud teams, provisioning teams, and application owners must all appreciate why tagging matters. Without this shared understanding, inaccuracies and missing tags become likely.

Tools such as ServiceNow's Tag Governance can help audit adherence to tagging standards, locate gaps, and assign remediation tasks. Still, not everyone welcomes these automated prompts. Some teams view them as unnecessary administrative duties, underscoring the importance of communication and collaboration when implementing a tagging strategy.

While Tag-based service maps are favoured for cloud applications - owing to the relatively flat structure and the native tagging capabilities of cloud platforms - thoughtful configuration of Traversal Rules can enable tag-based service maps to display a hierarchical structure like that of top-down service maps and include untagged CIs through relationships in the CMDB.

In the example below, the first service map on the left only shows a pair of tagged virtual servers, but once traversal rules are configured, we can also see the virtual machines, the ESX server, and even the IP switches that all sit beneath them.

This works with native tagging - like those on cloud platforms - but also with tags generated directly in the CMDB with Tag Governance.



3. Dynamic CI Groups

Filter-based grouping in ServiceNow allows you to assemble configuration items (CIs) using saved filters—think naming conventions or environment attributes—which effectively function as an “application service” within the platform. It offers a straightforward setup, as no external tagging is required, and it enables you to rapidly group multiple servers or network devices for coordinated changes. However, filter-based methods do not provide the same in-depth dependency mapping that pattern-based discovery can deliver, making it less suitable for complex or frequently changing infrastructures.

4. Manual Mapping

Manual service mapping offers a level of precision that automated methods sometimes struggle to provide. Architects and application owners can accurately define service boundaries, which is particularly helpful for legacy applications or specialised environments. However, this approach demands regular updates to remain accurate, leading to a significant maintenance burden—especially for larger, rapidly evolving portfolios.

Despite the potential drawbacks, manual mapping serves important niche purposes. It can effectively fill gaps by adding unique dependencies, such as critical network routers or firewall configurations, on top of an otherwise automated service map. In smaller or relatively static environments with few changes, manual mapping alone may be sufficient, offering both clarity and control without requiring extensive automation efforts.

“Despite the potential drawbacks, manual mapping serves important niche purposes.”

Shared Infrastructure & Redundancy

Incorporating shared network devices—such as routers and switches—into service mapping requires striking the right balance between visibility and clarity. If every shared device is included in each application map, teams risk “map sprawl” and an abundance of change approvals that can slow progress. Conversely, omitting too much detail increases the likelihood of missing critical dependencies and causing unintended outages.

A practical way to avoid these pitfalls is to model shared infrastructure as stand-alone technical services or dynamic groups. Individual application services then reference these “building-block” services, providing a clear picture of essential interconnections without overwhelming users with unnecessary detail. This approach helps keep stakeholders informed while also reducing the noise of excessive notifications and approvals.



Production Ready Maps

Service maps are a cornerstone of Technology Operations, enabling organisations to understand the impact of infrastructure changes or incidents on critical services. When disruptions occur, they can rapidly cascade across the organisation, potentially affecting end customers. Given these risks, it is essential for application owners to routinely review and approve service maps to ensure their accuracy and completeness.

Regular validation of service maps should be embedded within Data Governance practices. One practical approach is to leverage Attestations within the CMDB Data Manager. This process uses CMDB tasks to prompt the Business Application's "Managed by" group to verify that dependencies within production Application Service maps remain both complete and correct. These attestations serve as a necessary complement to the standard map approval workflows within service mapping tools.

However, a key limitation of attestations is their reliance on manual verification, making them inherently subjective. While they remain a valuable mechanism, organisations operating in complex or highly regulated environments often require additional assurance. Tools such as Data Content Manager (DCM) from Qualdatrix provide a structured way to audit service maps by comparing them against predefined architectural "blueprints." If deviations exceed a defined threshold, DCM automatically assigns remediation tasks to the relevant data owners—whether the application owner or the service team responsible for the underlying infrastructure.

By combining manual attestations with structured remediation workflows, technology owners can gain greater confidence that service maps accurately reflect the production environment.

“Regular validation of service maps should be embedded within Data Governance practices.”





Organising for Success

Effective service mapping extends beyond technical discovery—it requires close collaboration between enterprise architects, application owners, cloud and infrastructure teams, and IT Service Management (ITSM) stakeholders. Securing governance and sponsorship from senior leadership, particularly when driven by risk and compliance obligations such as MRAs, is often key to ensuring successful adoption at scale.

Many organisations structure their approach around the Common Service Data Model (CSDM), which provides a standardised way to define business capabilities, business applications, application services, and technical services. This framework helps distinguish between services that require detailed discovery and those that can be maintained at a higher-level relationship.

When integrating service mapping with change and incident management, it is important to be mindful of the complexities introduced by ServiceNow's default “service associations” rather than explicit CI relationships. This is particularly relevant when combining manually created maps with automated discovery. Maintaining data consistency across these different approaches remains an ongoing challenge for many organisations.

“Many organisations structure their approach around the common Service Data Model (CDSM).”

Conclusion - readiness is key!

Service maps form the connective fabric that supports resilient, high-performing technology operations. They are not just a technical concern for IT application teams—poor-quality maps can introduce operational risk, slow remediation efforts, and expose organisations and their customers to unnecessary disruptions. Accurate, well-maintained service maps are essential for ensuring resilience, efficiency, and regulatory compliance.

Pattern-based (top-down) mapping can be highly effective but often struggles to scale in complex or legacy-heavy environments. It works well in controlled, well-documented settings but can become resource intensive as application landscapes expand. Conversely, tag-based approaches deliver rapid results, provided organisations enforce consistent tagging standards and governance. Over time, successful tag-based mapping depends on strong provisioning processes to maintain data integrity.

Manual mapping remains useful in certain scenarios, such as addressing gaps in legacy systems or refining details for exceptions. However, relying on manual processes alone is rarely sustainable at scale. Dynamic configuration item (CI) groups offer a lightweight alternative for high-level categorisation, though they lack the detailed, visual representation provided by top-down maps.

There is no one-size-fits-all approach. The choice between top-down, tag-based, manual, or dynamic group mapping often depends on the architecture of the application service itself. Regardless of the approach taken, organisational readiness is critical. Effective service mapping requires strong architecture, governance, and process alignment—it should never be treated as merely a “ServiceNow project.”

Looking ahead, many enterprises must still address the challenge of shared or highly resilient infrastructure, where thousands of services compete for common resources. Future discussions may focus on architectural design patterns that better segment and manage these shared environments.

Synechron brings extensive experience in service mapping within complex, highly regulated environments. Our expertise has shown that a blended approach is often necessary—balancing legacy constraints with a strategic focus on tagging, architecture, and governance. By adopting a structured, pragmatic approach, organisations can achieve service maps that are both accurate and maintainable in the long term.



Capture your future faster.

Synechron is an elite ServiceNow partner, experienced in delivering major transformations at scale for clients operating in complex and highly regulated environments - all delivered by our world-class team.

- Transform at scale
- Engineer expertly
- Build in resilience
- Accelerate with AI



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Paul helps clients with the critical task of rationalising and aligning their data fabric so that they can fully leverage their investment in ServiceNow and the opportunities offered by AI. He has helped some of the world's leading financial organisations find efficient and rational solutions to complex legacy data challenges.



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