WHITE PAPER

What you should know about the Common Services Data Model

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The Common Services Data Model (CSDM) represents a shared set of service-related definitions that span the ServiceNow® product portfolio and the Now Platform®. They are being standardized to ensure accurate service reporting and consistent use of standard terms, as well as to provide prescriptive guidance on service modeling. The data model includes the recommended mappings for the service-related tables and CI classes. The scope of CSDM will continually be extended to include more prescriptive guidance for IT service management (ITSM), customer service management (CSM), human resource service delivery, security operations (SecOps), IT asset management (ITAM), and the internet of things (IOT). The intent of this white paper is to provide an introduction to CSDM that includes mapping and architectural guidance for service-related objects. ServiceNow intends to provide all CSDM-related objects and CMDB core tables as part of the shipping OOB product regardless of licensing beginning in the NY release. Where applicable, this white paper will point out release dependencies.

The Common Service Data Model graphic below (Figure 1) includes short descriptions for quick reference purposes. These are followed up by more detailed descriptions, conceptual to physical mapping and mocked up examples of actual implementations. While the intent is to provide prescriptive guidance, the model was specifically designed with extensibility in mind so that customers could extend it as needed (e.g. add "medical" as a service classification). Note that the various domains of IT business management, IT service management and IT operations management are identified and color coded so that they can be loosely translated to the various ServiceNow product lines. This representation also accounts for how different persona architypes may consume, view, and populate the model.

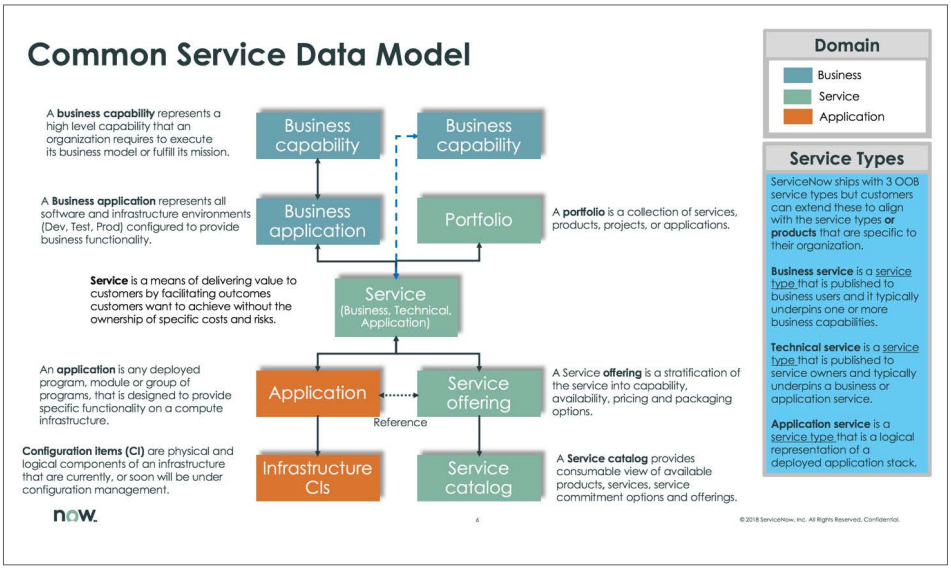


Figure 1

When you apply the CSDM model in your organization, the recommendation is to begin with one or two services that are well understood. Once successfully mapped, these will serve as the foundation for modeling the remaining services in a portfolio. Be aware that a degree of variation can be expected as every company views products, services, applications, offerings, and configuration items slightly different. The following object definitions are described by domain; however, when modeling, they should not be thought of as a linear hierarchy.

Business capabilities

A business capability can be described as a high-level capability that an organization requires to execute its business model or fulfill its mission. A business capability is typically described in the context of performing specific tasks to achieve one or more business outcomes. Business capabilities are often represented as verbs (e.g. managing financials or providing IT support services). It is recommended that you establish a CI relationship between the business capability and the business applications for visualization and reporting purposes. Subsequently, you should establish a similar relationship between business applications and the application services to ascertain the risks involved in using them. This is necessary since enterprise architects routinely assess services based on their relationships to business capabilities and business applications. An accurate service model that includes the relationships to business capabilities can serve as the foundation for strategy-aligned architectural decisions.

Business capabilities are recorded in the **cmdb_ci_business_capability** table. Business capabilities can be represented in a hierarchical model that includes a parent business capability that may be underpinned by one or more lower level capabilities. These lower level capabilities are referred to as "leaf nodes" in the business capability hierarchy and are typically represented by numeric values such as 1.0 for the parent and 2.0-6.0 for the leaf nodes. If a business capability hierarchy appears to require more than six levels, it is likely a candidate to be decoupled into multiple business capabilities.

It is recommended that you use the business capability form to create, modify, and extend business capabilities. If you add a new capability, update an existing capability, delete a capability at a leaf node level, the levels of all the capabilities for the leaf nodes in that hierarchy must be updated accordingly. The preferred method for updating capabilities is to click the **Update Capability Level and HierarchyID** related link to update the levels in the hierarchy so that the capability map reflects the change. The following conditions should be considered when working with business capabilities.

Business capability update guidance

- When adding a capability, the hierarchy level is automatically assigned based on parent capability level
- If a parent capability is updated in the hierarchy, the levels of all its child capabilities are recalculated
- The total number of levels cannot exceed more than six in the hierarchy
- Only leaf node level capabilities or capabilities that have no child can be deleted
- Do not create circular relationships. In creating a parent capability, a child capability cannot be its parent

Business applications

A business application represents all software and infrastructure (e.g. catalog of titles) configured to provide business functionality. Business applications are used to increase productivity and to perform other business functions accurately (e.g. payables, receivables, general ledger). Business applications are software used by business users to perform a business function. They can span multiple environments and / or geographies (e.g. dev, test, prod or Americas, APJ, EMEA). You can use the business application form shown below (Figure 2) to add the applications that your organization uses based on the business capabilities that they serve. You can record the details of a business application manually via the form or import the list of applications from a spreadsheet or a third-party tool. To import data, define a data source and transform map and run or schedule an import. While the use of business applications is not required, it is a recommended data object.

Figure 1

Since business application is a new CMDB CI class, you will need to manually create relationships between the business application and other CIs such as the application service. If needed, two or more applications can be integrated or connected to each other to establish a relationship between them. This allows you to relate business applications to other infrastructural CIs such as database and webservers as well. Using ServiceNow APM, you can add any business application needed to assess and track for costs, usage, business value, functional fitment, and risks.

Portfolio

At the highest level, a portfolio is a collection of services, products, projects, or applications. Portfolio(s) are used to manage like items together for a business. These may be grouped by objective, capabilities, organization, or geography, etc. (e.g. ERP or financial management). ServiceNow supports a wide range of portfolio types such as service, project, and applications. In this white paper, the focus will be limited to the service portfolio.

Service portfolio

The ServiceNow Service Portfolio Management (SPM) module lets you add, change, update, and manage services throughout their respective lifecycles. It reflects how those services are categorized, provided, consumed, and measured. The ServiceNow SPM module retrieves the information it displays from the related records, enabling you to see services holistically. This includes such attributes as scope, pricing, costs, performance, offerings, commitments, and health. Service Portfolio Management v2 will include the new **Service Owner Workspace** and the associated **service_portfolio** table. In the interim, you can create your own table for service portfolio and then migrate the data to the new table after upgrading to Madrid or later.

Service catalog

A service catalog provides a consumable view of available products, services, service commitment options, and offerings. Catalogs help manage what services a user may have access to, and they are the initiation point for access to available services. For example, HR service catalog, technical catalog. (Figure 3). Typically, only the catalog user criteria are configured. This is because providing control by service offering subscribers requires the service portfolio plugin and the configuration of related lists on service offering and catalog item level.

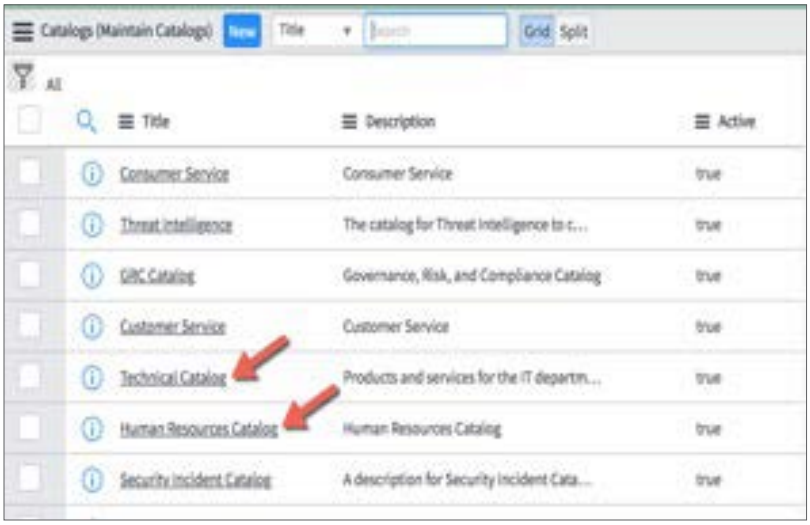


Figure 3

Catalog item

A catalog item is a requestable item within the service catalog. Catalog items are the consumable representations of service offerings. A given service is often made up of multiple catalog items. (e.g. employee onboarding). Catalog items are published on the service portal and are available to users who are subscribed to services linked with them or have access because of specific catalog category/item user criteria. One catalog item should be linked to one service offering.

Services

A service is a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks. This is consistent with the base definition of "service" in ITIL v3 and IT4IT. Services typically have three aspects: the interaction, the offering, and the service system. While ServiceNow ships with three OOB service types, you can extend these service types of classifications to align with the service types in your organization. The three OOB service types are business, technical, and application.

- **Business service** is a service type that is published to business users, and it typically underpins one or more business capabilities.
- **Technical service** is a service type that is published to service owners and typically underpins one or more business or application services.
- **Application service** is a service type that is a logical representation of a deployed application stack.

Service offering

Service offerings are the starting point for configuring Service Portfolio Management (SPM). Service offerings (SO) consist of one or more service commitments that uniquely define the level of service in terms of availability, scope, and pricing, and other factors. For example, an organization may offer two levels of desktop support in your organization: a "standard" offering of upgrades and virus protection and an "executive" offering with the standard commitments plus some type of response guarantee such as 30 minutes between 8-5 on weekdays.

A service offering is defined as a stratification of the service into capability, availability, pricing, and packaging options. Different levels of performance and features for a given service can be made available via the service offering. A service commitment defines service delivery obligations agreed to between consumer and provider. The service offering is the specific record in ServiceNow that identifies the business area being serviced and the entity where the service is delivered. There is also a concept of a service offering subscription that records which users have access to an offering. Some business services and offerings depend on application service. Service offering is derived from service and refined depending on how the parent serves a specific business need. ServiceNow recommends that every operational business or technical service have at least one offering.

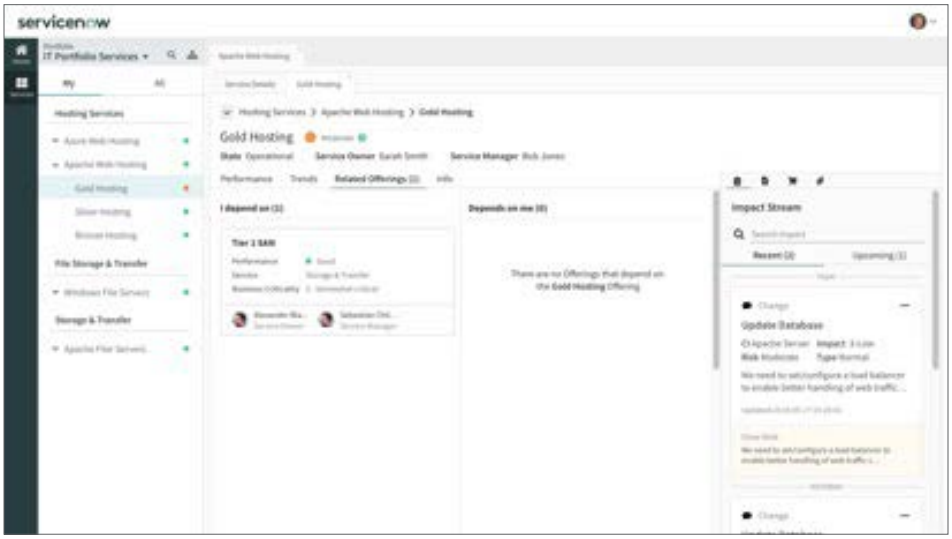


Figure 4

If offerings have different commitments (and they usually will), those differences should be represented by different SLA definitions. If a customer has no offerings, their SLAs will almost always be at a process level only (P1 incident, minor change, etc.) with no reference to the service offering being affected. Services and offerings that you provide can be represented in the service catalog (by catalog Items) and made active for consumers to see.

Application Services

Application service is a service type that is a logical representation of a deployed application stack. Using application services lets you view maps and change history for services. If event management is deployed, you can monitor service performance and identify health issues for application services. Application service is the entry point for service mapping. Application services are mapped to **cmdb_ci_service_discovered** and they underpin a business or technical service. The offering of application services should be exposed via the related business or technical service offering. Application service was introduced in London and will continue to service as a key relationship entity for ITSM, ITOM, ITBM, and CSM in the upcoming releases. Its relationships include business applications, business services, technical services, applications, and infrastructure CIs.

Application

An application is any deployed program or module that is designed to provide specific functionality on a compute infrastructure. Both hardware and software models can make up a given application. An application defines behavior and has specific functionality associated with it. Applications are typically discoverable instances and tend to provide a specific set of functionality for one or more services. In the context of ServiceNow, applications are limited to single host to ensure they maintain a unique identification during discovery. Additionally, there is not a one-to-one relationship between application and application service.

Infrastructure configuration items (CI)

Configuration items (CI) are physical and logical components of an infrastructure that are currently or soon will be under configuration management. CIs may be a single module such as a server, database, router, or more complex items such as a complete system (e.g. web server, database, infrastructure). The underlying infrastructure components or CIs are known and well understood in most organizations. The complexity often surfaces as the data structures are layered on top of those physical Cis, which is why ServiceNow recommends engaging a business relationship manager or enterprise architect to define the various business capabilities and business applications.

Conceptual to physical mapping

In this section, we will take a look at how these conceptual objects from the CSDM map to the physical tables and CI classes. The mappings in Figure 5 are straightforward, but please be advised that we are likely strengthening the relationships across the service, application, and portfolio areas to the degree possible. ServiceNow also intends to update the ITSM reference architecture with an ERD for CSDM. Future versions of CSDM will include more detailed information on how APM and PPM relate.

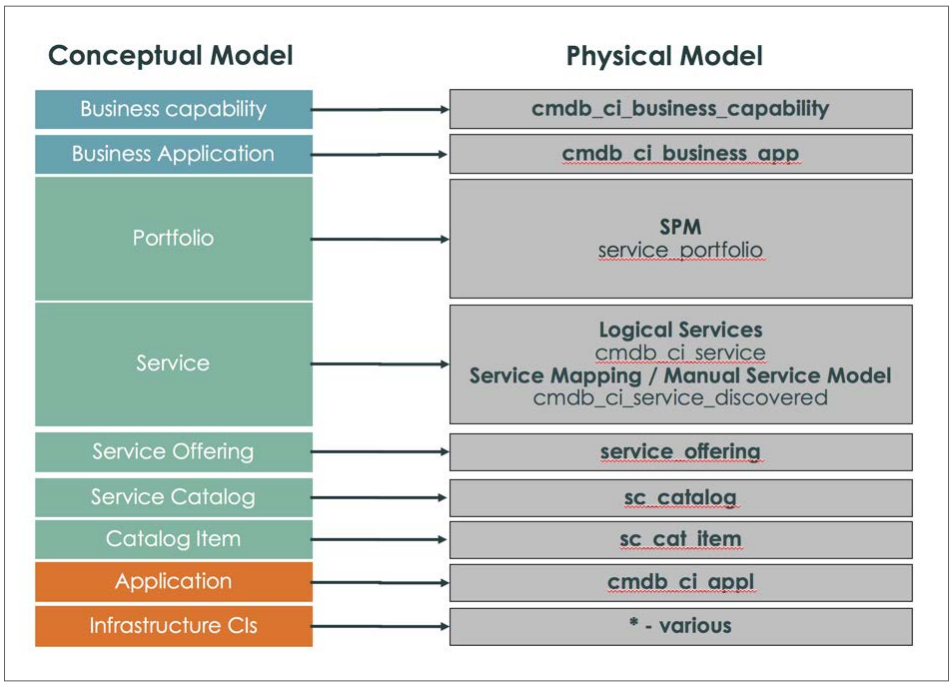


Figure 5

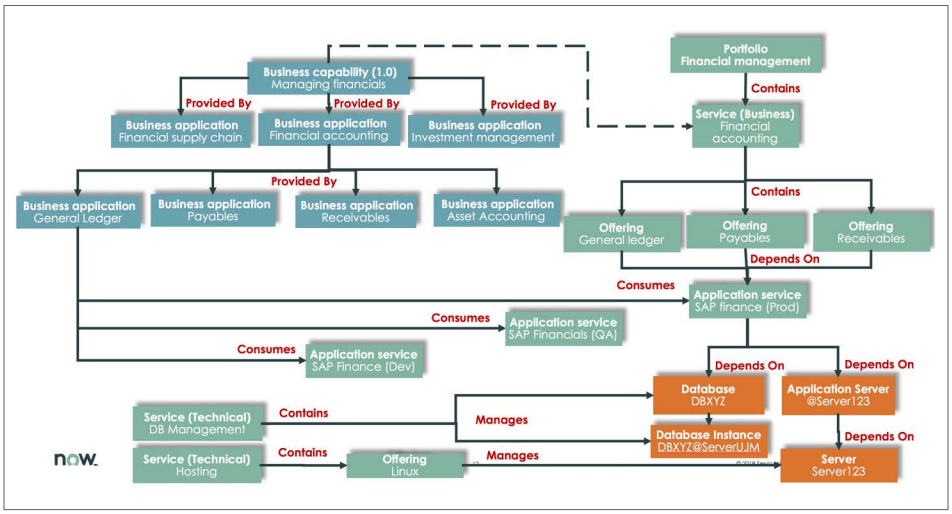


Figure 6 – SAP Financials Example

Applying CSDM

Applying CSDM to customer environments requires a little bit of planning since each customer environment is slightly different and the degree of management can vary from organization to organization. The first example, in Figure 6, represents a subset of SAP Financials in the context of CSDM. SAP Financials has a parent business capability of managing financials. The leaf node business capabilities include supply chain, accounting, and investment management. The next set of data objects are the business applications. In this example, there are a set of business applications represented (G/L, payables, receivables, and asset). The service relationship to general ledger is the application service SAP finance production. This application service inherits the offering and service commitment from the top-level business service "Financial accounting." The business application "General ledger" also serves as a rollup for the dev, prod and test environments of the SAP Financial application services. It should be noted, that Technology Services are shown both with and without an offering in the following example. When using ITOM products, like Event Management, a Technology Service CI will be directly connected to its included CIs (e.g. Database, Server) and not connected via an offering.

Our second example (Figure 7) is representative of ServiceNow. The parent business capability IT Support Services. The Leaf Node business capabilities include "Manage Incidents", "Manage Changes" and "Directory Services". The Business Application Layer is the first reference that we see to a product name. Evaluating the SN Mid Server business application shows that there is a relationship with the release and environment specific instance of ServiceNow. The Mid Server application then sends data to the ServiceNow application service.

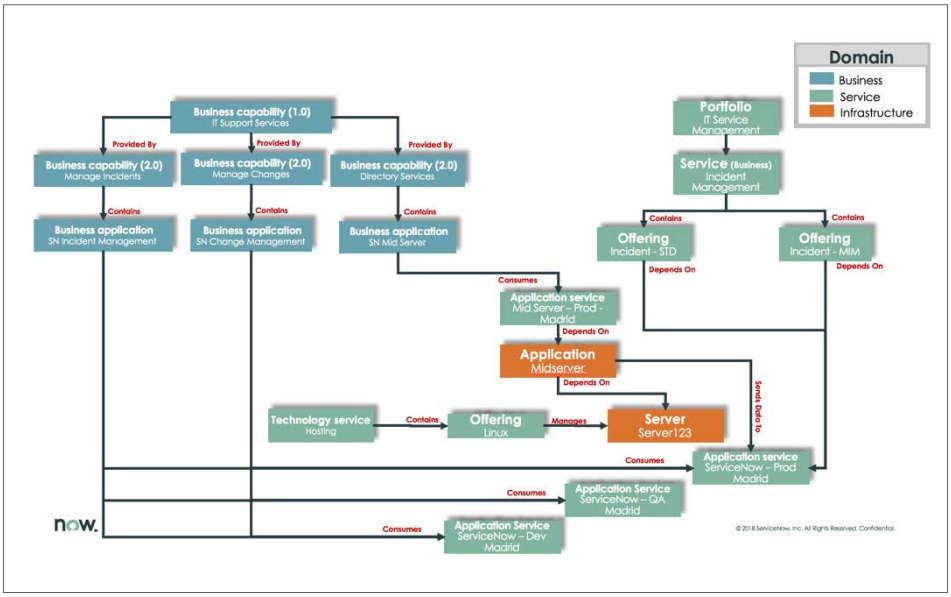


Figure 7 – ServiceNow ITSM Example

When an incident is registered against a business or technical service, we recommend selecting the application service CI for logging the initial incident. The example in Figure 8 shows the business service field being populated with business or technical service while the CI is being populated with application service or the specific configuration item (CI). You may want to add separate fields to the form for application service and offering to ensure the incident gets registered with all information.

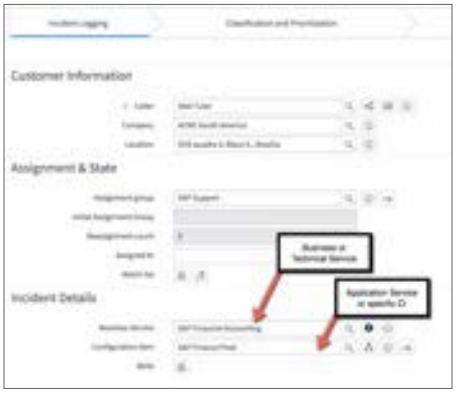


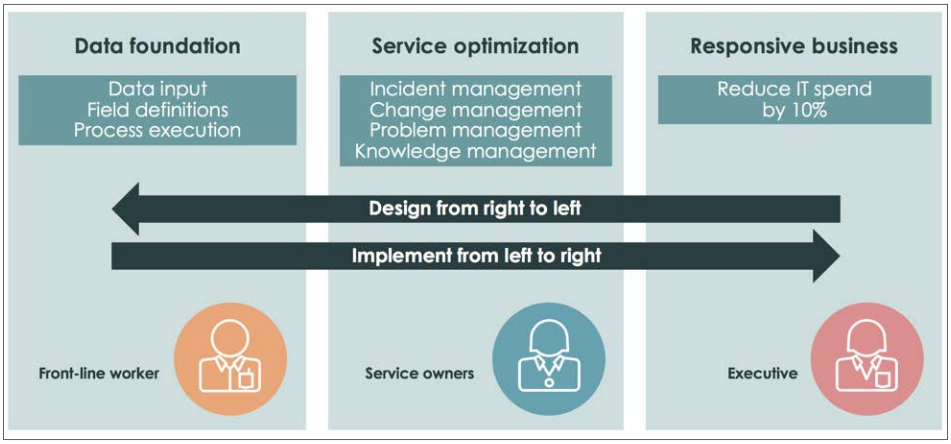
Figure 8

Reporting and analytics

ServiceNow envisions providing additional out-of-the-box visualization, reporting, and analytics capabilities in future releases, but there are few foundational guidelines and activities that can pay huge dividends when it comes to CSDM future proofing, alignment, and service reporting.

Foundational guidelines / activities

1. Inventory current state of service reporting
2. Clarify desired outcomes of reporting and analytics (Design R2L & Implement L2R)
3. Verify reporting and analytics requirements are aligned to the strategy/ desired outcomes
4. Always use a consistent data structure/It will significantly improve quality
5. Always use fields consistently



Note: *There is a separately licensed product for advanced analytics (Performance Analytics)*

In the short term, it can be helpful to leverage the CMDB query builder to build on demand reporting to visualize the CMDB configuration Items and its dependencies. Most of the CSDM falls under CMDB data model. For example:

- Business service
- Application service
- Business application
- Business capability

You can build an on-demand query builder report to visualize infrastructure dependency with CSDM (Figure 9).

Figure 9

Additionally, a service mapping query in the CMDB query builder (Figure 10) can also be leveraged to return service mapping application services and dependencies with infrastructure stack and applications.

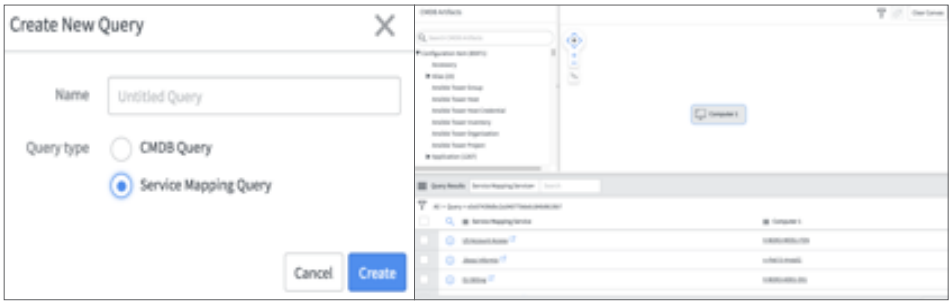


Figure 10

Your foundation for digital transformation

The Common Services Data Model (CSDM) should be used as a reference for mapping your IT services into ServiceNow. Additionally, we will be using CSDM to drive standardization and further strengthen the value proposition of using ServiceNow products and services. ServiceNow brings enormous value for enterprise customers that want to run IT as a business. CSDM, combined with the Now Platform, creates a standard blueprint for automated and integrated IT services. With streamlined supporting activities and value streams fully integrated on the Now Platform, you can realize full-value chain alignment, improved quality, transparency, better insights, automation, and lower costs. Ultimately, the combination of CSDM and ServiceNow serves as the foundation for digital transformation.

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