Introducing Telco Analytics Manager

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Preface

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Using this Manual

Welcome to Introducing Telco Analytics Manager (TAM).

This manual covers the different components that make up TAM along with an introduction to its principal features.

Before You Get Started

You should be familiar with the following:

- Telco Service Manager (TSM) architecture.
- Telco Service Manager (TSM) features.
- Programming Java and Java server pages.
- Designing or working with relational databases.
- Designing or working with extensible Markup Language (XML).

Who Should Read this Manual

This manual is for anybody who wants to learn more about Telco Analytics Manager.

How this Manual is Organized

This manual contains the following chapters:

- **Introducing edocs Telco Solutions**

  This chapter introduces edocs Telco Solutions and architecture.

  It contains information about:

  - edocs Telco Solutions
  - Important concepts
  - System architecture

- **Main Features of Telco Analytics Manager**

  This chapter covers all of the functional features of TAM.

What Typographical Changes and Symbols Mean

This manual uses the following conventions:

TYPEFACE	MEANING	EXAMPLE
Italics	Manuals, topics or other important items	Refer to *Developing Connectors*.
Small Capitals	Software and Component names	Your application uses a database called the CID.
Fixed Width	File names, commands, paths, and on screen commands	Go to `//home/my file`

Finding the Information You Need

edocs Telco Solutions comes with comprehensive documentation that covers all aspects of building TAM solutions. You should always read the release bulletin for late-breaking information.

Getting Started

If you are new to edocs Telco Solutions, you should start by reading *Introducing Telco Analytics Manager*. This manual contains an overview of the various components along with a list of the available features. It introduces various concepts and components you must be familiar with before moving on to more specific documentation. Once you have finished, you can read the manual that covers different aspects of working with the application. At the beginning of each manual, you will find an introductory chapter that covers concepts and tasks.

Designing Your Solution

While reading *Introducing Telco Analytics Manager*, you can begin to envision how the different components can address your solution's needs.

You can refer to *Developing Analytical Applications* for information about customizing the database, synchronizing data with Telco Service Manager (TSM), loading data from external invoice files, and other design issues. The *CBU Reference Guide* also gives you the information about how the information in your solution is managed and stored. You should also read the section on integrating Telco Analytics Manager with Telco Service Manager in *Developing Analytical Applications*.

Installing Your Analytical Application

You should start by reading the Release Bulletin. For detailed installation and configuring information, refer to *Installing Telco Analytics Manager*. This manual covers installing *Telco Analytics Manager* on one or more computers. It also contains the information you need to configure the different components you install.

Building Analytical Solutions

If you are designing and programming analytical applications, you have several different sources of information. If you are programming the user interface of the solution, you should read *Building Reports*. You can also refer to the *QRA API Specification* and the *QRA Configuration File Reference Documentation* for detailed information about the different components you can use to build reports which serve as the user interface. For configuring the various components, refer to *Installing Telco Analytics Manager* and sections in other documents that specifically deal with the component to be configured.

If you are working on the data warehouse side of TAM and are interested in how the information will be loaded into the data warehouse, you should read *Developing Analytical Applications*. For more information about the design and structure of the CBU, you should refer to the *CBU Reference Guide* along with the *CBU Reference* documentation for your database.

Integrating TAM and TSM

If you are involved in configuring your solution to work with Telco Service Manager, you should read *Introducing Telco Analytics Manager* for an overview of the components and how they interact. You should then read *Developing Analytical Applications* for information about synchronizing data between the Telco Analytics Manager and Telco Service Manager. In this manual, you will also find information about loading data in both the CBU and the Telco Service Manager.

Managing Telco Analytics Manager

If you are responsible for managing Telco Analytics Manager, you should read the *Installing Telco Analytics Manager* for information about configuring various components. *Administrating Telco Analytics Manager* covers what you need to know about managing your solution at runtime.

If You Need Help

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- How did the system respond to the error?
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If the system crashed or hung, please tell us.

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CHAPTER 1

Introducing edocs Telco Solutions

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Introducing edocs Telco Solutions

edocs Telco Solutions enables communications service providers to deliver a personalized, self-service customer portal, providing online account management, e-Commerce and electronic bill analysis.

It allows consumers, business customers and POS employees to activate and manage subscriptions, buy new products and services, review, investigate and pay bills, resolve problems, and analyze every aspect of the service relationship using virtually any commercially available communications device.

The Telco Analytics Manager

Telco Analytics Manager enables the analysis and presentation of user invoice and usage information.

Overview of Telco Analytics Manager Architecture

Overview of Telco Analytics Manager Components

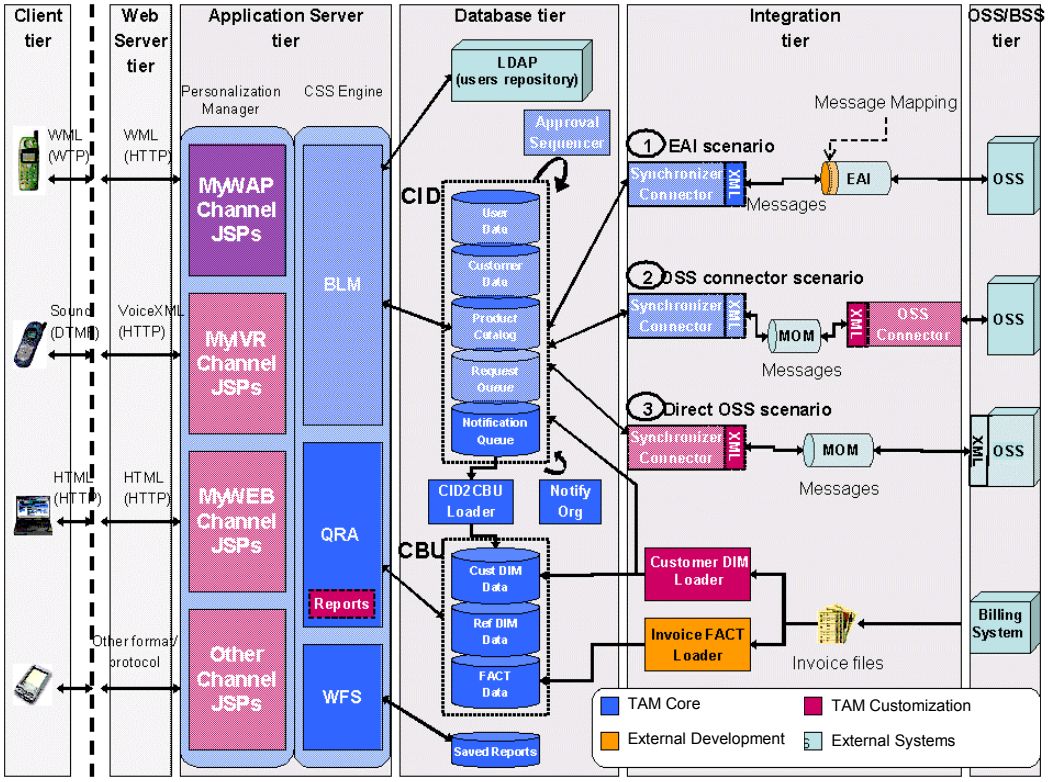
TAM utilizes a Customer Analysis Warehouse (CAW), which is a tightly integrated data warehouse allowing customers and other users to analyze different aspects of their service relationship online. Different star-schemas within the CAW each hold data relating to specific aspects of the relationship, either uploaded from the relevant external systems (billing and usage data is uploaded from the service provider's billing system) or synchronized with the CID, in cases where this is a more appropriate source for the data (contract changes, self-service usage).

Security and enterprise hierarchy data is also regularly synchronized. The unified security framework prevents unauthorized access to specific data, for example, allowing business employees to analyze their own calls while preventing them from viewing all details of the associated invoices. Multiple enterprise hierarchies allow users to analyze data from different perspectives, for instance by reviewing call costs by department, by geography or by project team.

Customer Analysis includes:

- The Communications and Billed Usage (CBU) database which contains customer billing and usage information for analysis
- The Notification Framework to synchronize the CBU with information in the CID
- The Customer Dimension Loader tool to load customer information into the CBU and CID
- The Query, Reporting, and Analysis (QRA) Engine used to build reports using data in the CBU
- The Web File System (WFS) This component enables to store data in a file system. In Telco Analytics Manager, it is specifically used to save reports.
- Sample data and reports

This diagram shows the different components.


Client tier
Web Server tier
Application Server tier
Database tier
Integration tier
OSS/BSS tier
Personalization Manager
CSS Engine
WML (WTP)
WML (HTTP)
Sound (DTMF)
VoiceXML (HTTP)
HTML (HTTP)
HTML (HTTP)
Other format/ protocol
MyWAP Channel JSPs
MyVR Channel JSPs
MyWEB Channel JSPs
Other Channel JSPs
BLM
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Reports
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Approval Sequencer
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Invoice files
Billing System
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External Systems

About the CBU

The CBU database contains customers billing and usage information.

Users can analyze their invoices using:

- Reference dimensions such as date/time, tariff, and service
- Customer-specific information such as organization views, contracts, and billing accounts

The CBU also comes with built-in security based on roles and scopes. This type of security, which mirrors the security of Telco Service Manager (TSM), ensures the security and confidentiality of the information in the CBU. User access to the CBU depends on user authentication and the user's assigned roles and scopes.

The CBU is designed to allow users to analyze their own invoices and usage. It is not designed for analysis of the entire customer base.

For more information about:

- The structure and organization of the CBU, refer to the *CBU Reference Guide* and the *CBU Reference Documentation* corresponding to your database.

- Using the administration tools, refer to *Administrating Telco Analytics Manager*.

- Sample data, refer to the CBU demokit readme documentation. This documentation is located in `<home_dir>/samples/cbu/demokit` in a subdirectory corresponding to your database.

About the Notification Framework

Depending on how Telco Analytics Manager is integrated and the deployed features, the CBU must be regularly synchronized with the CID to ensure that the data is coherent.

This synchronization is achieved in a very similar manner to the synchronization with back-office systems – using an asynchronous request process called the CID2CBU loader. Notifications are created whenever a change is made to the CID that must be synchronized with the CBU.

For example, when a new contract is created, the contract record must be added to the CBU. The CID2CBU loader retrieves the Notification and updates the CBU accordingly.

For more information about:

- Activating Notification, refer to *Installing Telco Analytics Manager*.

- Running the CID2CBU Loader, refer to *Administrating Telco Analytics Manager*.

- Configuring the CID2CBU Loader, refer to *Installing Telco Analytics Manager*.

- Customizing the behavior of the CID2CBU Loader, refer to *Developing Analytical Applications*.

About the Query, Reporting, and Analysis Engine

The Query, Reporting and Analysis (QRA) Engine provides a secure, standard approach to retrieving analysis data from the CBU.

Data Providers are the key components of the QRA. Data Providers separate reports from the physical data repository, guaranteeing secure access, and allow new reports to be designed and used without the need to understand the technical definition of the CBU schema. Within the Report Processors, Data Providers are effectively the source of analysis data.

Another important component is the Data Transformer. This component is responsible for transforming the raw data obtained by the Data Provider into tables and charts.

The QRA comes with:

- A complete API to manage reports
- A sample set of reports
- A sample set of JSPs

For more information about:

- The structure and organization of the QRA, refer to the *Developing Reports*.

- The QRA APIs, refer to the *QRA API Reference Documentation*.

- Structure of the report definition file, refer to the *QRA Report Definition File Reference Documentation*.

- Saving report files, refer to *Developing Analytical Applications*.

About the Web File System

The Web File System (WFS) component works with your application server to allow users to store data in a file system.

When users analyze their accounts with reports, they may need to save the reports for future reference. They can use the features of this component to:

- Save reports
- List saved reports
- Open saved reports

For more information about:

- Using the WFS to manage reports, refer to *Developing Reports*.

- Using the WFS APIs, refer to the *WFS API Reference Documentation*.

- Administrating saved reports, refer to *Administrating Telco Analytics Manager*.

About the Customer Dimension Loader Framework

When the only available customer data are in invoices, both the CID and the CBU must be populated with them. This loading is achieved by a batch processing of invoice files built on standard SmartLink (also known as ISF) components. The tool you use to do this is the CustDim Loader. CID and CBU customer legacy information (Customer, contracts and billing accounts) are updated at every Bill run.

Populating your CBU and CID can use one of the following modes:

- Even Mode
- Invoice Mode

For more information about:

- Loading policies of the CBU, refer to the *CBU Reference Guide*.

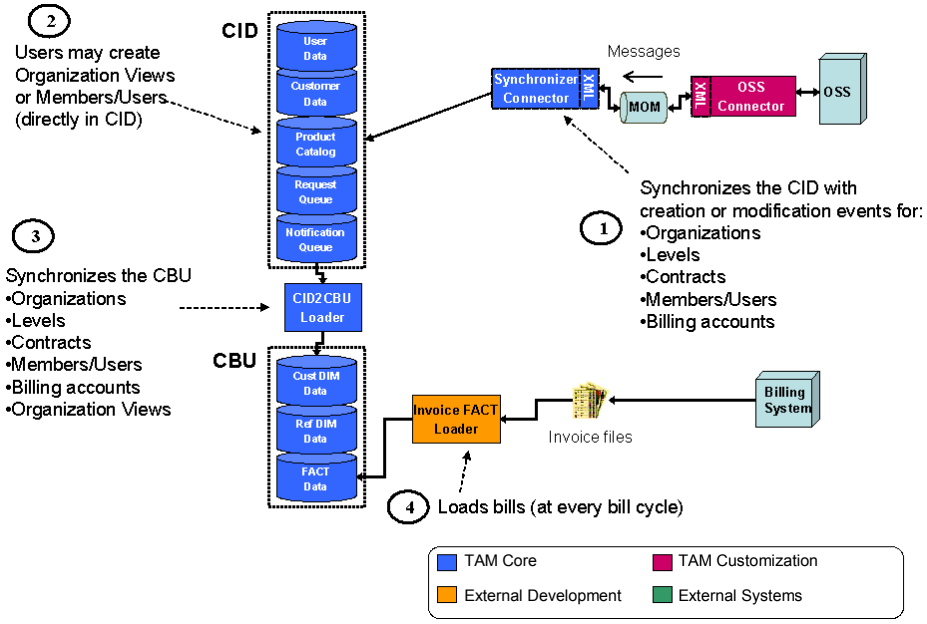
- Using the CustDim Loader, refer to *Developing Analytical Applications*.

- Configuring and customizing the CustDim Loader, refer to *Developing Analytical Applications.* You also need to refer to *Building Connectors* for more information about using the Integration Logic Studio.

About Event Mode Population

If you want to deploy Telco Service Management (TSM) features, you should synchronize the CID frequently with OSS customer modifications (ideally by using real time events sent by the OSS)

In this case, the notification framework synchronizes the CBU with the CID for all customer data modified and required for analysis.

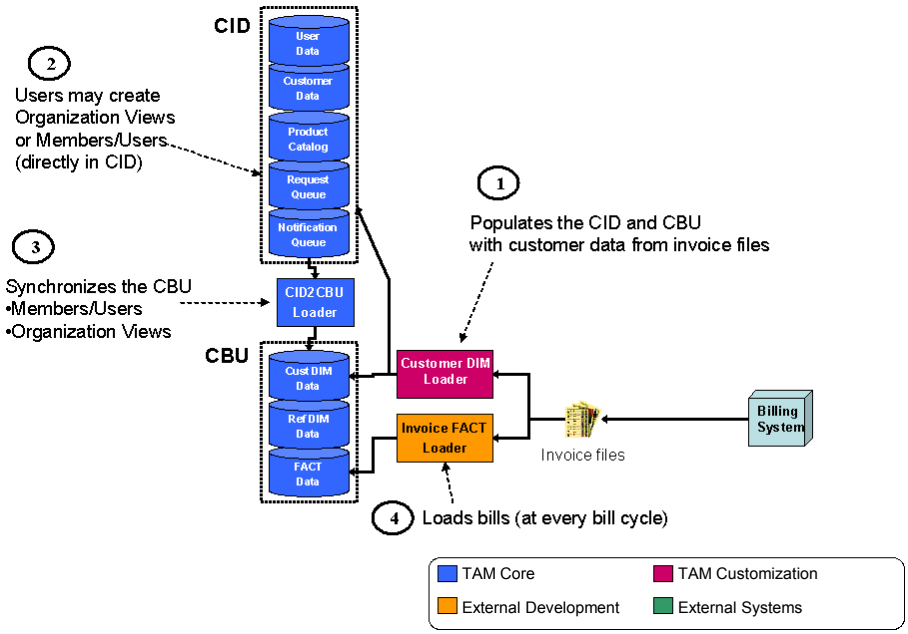


About Invoice Mode Population

If you are just interested in deploying Telco Analytics Manager, you could decide to only populate customer data from invoices.

In this case, the built-in CustDim Loader framework ensures extraction of customer information from invoice files and loads them both in the CID and in the CBU.

Nevertheless, if you want to deploy organization view management feature or managed users in the CID, the notification framework still synchronizes this information in the CBU.



Terminology

The following list introduces some of the terms you need to be familiar with:

TERM	DEFINITION
Access control	Restrict access to records to authorized users.
Access Control List (ACL)	Links between resources and actors that grant specific access privileges to resources.
Actor	A principal in access control. Actors can be an organization, level or member.
Billed Usage Detail Record (BUDR)	Usage detail record related to a specific bill
Billing account	Group of contracts to be billed together (on same invoice)
Bill line item	The way of identifying the services, usage and quantity being sold / bought

TERM	DEFINITION
Bill/Invoice	An electronic or paper document sent to a customer associated with a payment due.
Bill/Invoice Summary	The summary information that is essential to a Customer to understand what is owed. Typical information may include: Amount Owed, Date Due, …
CBU	Communications Billing and Usage database
Contract sub-invoice	Detail of bill (summary and line items) specific to one contract
Detailed Bill	Contains a list of billed usage detail records
Usage Detail Record	A record of usage. Examples include CDR (call detail record), IPDR (IP detail record), xDR (other)
User	A named person that logs in the system. This person is identified by a (unique) login and a name.

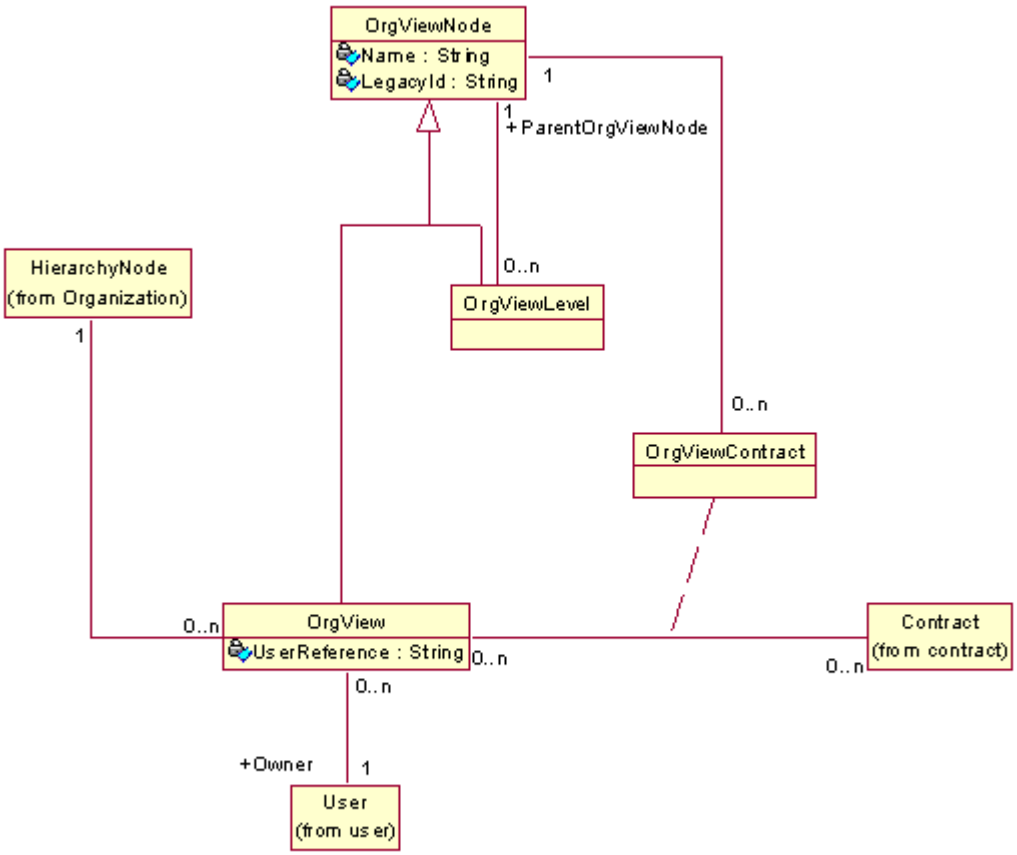
Overview of Concepts

Object Model

Telco Analytics Manager allows users to analyze their invoice data via:

- Reference dimensions such as tariff, destination zone, time, etc.
- Customer dimension such as contracts, billing accounts, etc.

Users can also specify their own analysis dimensions by using the Organization View management feature. They can use this feature to build hierarchical structures and assign contracts to them. This way, their analysis dimensions correspond to the way they organize their business and not on how an OSS manages data.



Organization Views

An organization view can be associated at any level of the organization.

An organization view is a hierarchical structure with associated contract to any node of the organization view (including the organization view itself).

A contract can be associated with several organization views.

Inside an organization view, a contract can be associated to only one node of the organization view.

An organization view is associated to the user who owns it.

CHAPTER 2

Main Features of Telco Analytics Manager

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Overview of the Main Features

This section illustrates some of the standard features of Telco Analytics Manager, but does not represent an exhaustive feature list. These standard functions are included in the core Internet application template, which you can use as the basis for your own application.

Access to these features depends on the user's role and scope. This ensures that only authorized users can view information and make changes to objects.

The main features include:

- Managing organization views
- Managing reports

Managing Organization Views

For all of these features, access and security depend on the organization view owner.

An organization view is locally managed in the CID and all modifications are immediately stored in it.

Create an organization view

Users can create a new organization view.

The new organization view is immediately stored in the CID and owned by the user.

Modify an organization view

Users can modify organization view attributes.

Remove an organization view

Users can remove an organization view. The entire hierarchy is immediately removed

Change organization view owner

Users can change the organization view owner

Download/Upload an organization view

Users can download an organization view in an XML format.

Users can upload a new or existing organization view specified in an XML file. Uploading an existing organization view replaces the entire existing hierarchy.

Set organization view hierarchy

Users can add, modify, move or remove a node of an organization view

Removing a node removes the node's sub hierarchy.

Set contracts in an organization view hierarchy

Users can add, move or remove a contract inside an existing organization view at any node.

Browse organization view hierarchy

Users can:

- Browse nodes and sub nodes
- Browse nodes contracts associations
- Search contracts below a node of an organization view (recursively or not).

Only visible contracts are returned by the search.

Managing Reports

List available Reports to execute

A user can list the reports available for execution.

Execute reports

- On main invoices

  A user can execute reports on the global amounts in main invoices.
- On sub invoices

  A user can execute reports on the global amounts in sub invoices.
- On contract invoices

  A user can execute reports on the global amounts in contract invoices.
- On billed usage detail records

  A user can execute reports on billed usage detail records of one or several invoices
- On charge details

  A user can execute reports on charge details of one or several main invoices, sub invoices or contract invoices.

Save an executed report

A user can save an executed report.

The user enters a name and a unique code is automatically assigned to the saved report.

This saves the report definition, result data, prompt values, filters, and sorts.

List saved reports

A user can list the saved reports.

The saved reports are not secured since they are not linked to a member or level.

They can be secured in the JSP by using specific codes for the saved reports.

Remove a saved report

A user can remove a saved report.

These reports are permanently removed from the list of saved reports.

Rename a saved report

A user can rename a saved report.

View a saved report

A user can view a saved report. This saves the report definition, result data, prompt values, filters, and sorts.

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