

IBM Cognos TM1  
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## *Applications Guide*



**Note**

Before using this information and the product it supports, read the information in "Notices" on page 59.

**Product Information**

This document applies to IBM Cognos TM1 Version 10.3.0 and may also apply to subsequent releases.

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# Contents

<b>Introduction</b>	<b>v</b>
<b>TM1 client differentiation</b>	<b>vii</b>
End-user clients	vii
Administration clients	viii
<b>Chapter 1. Getting Started with Cognos TM1 Applications</b>	<b>1</b>
Set preferences	2
Open Cognos TM1 Applications	2
Cognos TM1 Applications Workflow	3
Review Data	4
Submit Data	5
Submitting a consolidated node or a single leaf node	5
Submitting all leaf nodes under a consolidated node	6
Submitting all leaf nodes and a consolidated node	6
Ownership, Bouncing, and Releasing	6
Email notifications	7
Adding commentary to Cognos TM1 Applications	7
Adding commentary at the cell level	8
Purging Commentary	8
<b>Chapter 2. Working with Data</b>	<b>11</b>
Parts of the Workspace	11
Tabs	12
Dimensions	12
Using the toolbar	13
Navigating Pages	15
Editing and Replacing Data	17
Copying and Pasting Data	17
Quick Data Entry Commands	18
Using Shortcuts in Different Clients	19
Using Data Spreading	21
Applying a Data Spread across Multiple Leaf Nodes from a Consolidated Node	21
Excluding Cells from Data Spreading	22
Excluding Consolidations from Data Spreading	22
Filtering a Cube View	23
Drilling Through to Detailed Data	24
Using Sandboxes	25
Using Cognos TM1 Application Web and other interfaces in a single Application	25
<b>Chapter 3. Managing Changes to the Grid</b>	<b>29</b>
Working with Tabs	29
Try It Yourself - Tear Off a Tab	29
Stacking Dimensions	29
Try It Yourself - Stack a Dimension	30
Replacing Dimensions	30
Try It Yourself - Replace Dimensions	30
Editing Subsets	30
Editing with the Subset Editor	31
Creating Custom Consolidations	40
<b>Chapter 4. Working with Charts</b>	<b>43</b>
Changing the Chart Type	43
Drilling from a Chart	43

<b>Chapter 5. Exporting Data</b>	<b>45</b>
<b>Appendix. Managing Cognos TM1 applications in the portal.</b>	<b>47</b>
Activating an application in a portal	47
Exporting an application from the portal	47
Importing an exported application to the portal	47
Resetting an application in the portal.	48
Setting workflow, translation, and text properties in the Applications Portal.	48
Setting Cognos TM1 Applications configuration options	49
Managing jobs in TM1 Applications	49
Configuring a TurboIntegrator process to execute on a workflow action	50
Considerations for creating a TurboIntegrator process that can be executed from a workflow action	51
Managing rights for the application	53
The interaction rights and access control in TM1 Applications	54
How to enforce security rights in an application	56
<b>Notices</b>	<b>59</b>
<b>Index</b>	<b>63</b>

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## Introduction

This guide describes how to use the IBM® Cognos® TM1® Applications to review and edit managed planning applications.

### Finding information

To find documentation on the web, including all translated documentation, access IBM Knowledge Center (<http://www.ibm.com/support/knowledgecenter>).

### Samples disclaimer

The Sample Outdoors Company, Great Outdoors Company, GO Sales, any variation of the Sample Outdoors or Great Outdoors names, and Planning Sample depict fictitious business operations with sample data used to develop sample applications for IBM and IBM customers. These fictitious records include sample data for sales transactions, product distribution, finance, and human resources. Any resemblance to actual names, addresses, contact numbers, or transaction values is coincidental. Other sample files may contain fictional data manually or machine generated, factual data compiled from academic or public sources, or data used with permission of the copyright holder, for use as sample data to develop sample applications. Product names referenced may be the trademarks of their respective owners. Unauthorized duplication is prohibited.

### Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products.

This product does not currently support accessibility features that help users with a physical disability, such as restricted mobility or limited vision, to use this product.

### Forward-looking statements

This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of IBM.



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## TM1 client differentiation

IBM Cognos TM1 provides multiple clients for both developers/administrators and end-users. Understanding these clients and differentiating between them can help you decide which client is most appropriate for your needs.

All clients are described fully in the IBM Cognos TM1 documentation.

- The *Cognos TM1 Performance Modeler User Guide* describes the development and administrative capabilities of Cognos TM1 Performance Modeler.
- The *Cognos TM1 Developer Guide* describes the development and administrative capabilities of Cognos TM1 Architect and Cognos TM1 Perspectives.
- The *Cognos TM1 Operations Guide* describes how to monitor and administer servers with the Cognos TM1 Operations Console.
- The *Cognos TM1 User Guide* describes the end-user analysis capabilities of Cognos TM1 Architect, Cognos TM1 Perspectives, and Cognos TM1 Web.
- The *Cognos Insight User Guide* describes the end-user analysis capabilities of Cognos Insight.
- The *Cognos TM1 Applications Guide* describes the end-user analysis capabilities of Cognos TM1 Application Web.
- The *Cognos Analysis for Microsoft Excel User Guide* describes how to build reports using data sources from IBM Cognos TM1 or IBM Cognos Business Intelligence.

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## End-user clients

Several end-user clients are available to interact with IBM Cognos TM1 data.

### IBM Cognos Insight

IBM Cognos Insight is both a client for TM1 Application Web and a personal analysis tool that you can use to analyze almost any set of data. In the context of Cognos TM1 Application Web, Cognos Insight is a full client application that is provisioned locally or as a remote download. When used as a client for Cognos TM1 Application Web there are two modes in which Cognos Insight can be used: Connected Mode and Disconnected Mode.

**Connected Mode** creates a live, bi-directional connection to the Cognos TM1 server. Any data that is updated on the TM1 server is updated in the Insight client when you perform a recalculation in Insight. This ensures that the data on the Insight client is always current when performing analysis or contributing to a plan. The trade-off for the live connection to the TM1 server is that more traffic is generated on the LAN and a heavier load is placed upon the TM1 server as compared to Disconnected Mode. Connected Mode should be used by users who have as fast connection to the TM1 server and do not suffer from any network latency.

**Disconnected Mode** is currently available only with child level nodes. Disconnected Mode downloads and creates a local copy of the Cognos TM1 server slice (TM1 model and data portion) with which you are working. This is beneficial in that it distributes the workload the TM1 server would have to maintain in any other connection mode. Processing is distributed between the client and the TM1 server in this mode. Disconnected Mode is beneficial to users on a high latency

LAN or users who are geographically distant from the TM1 server. When a user opens Cognos Insight in Disconnected Mode the TM1 model slice is downloaded and cached. All interaction with data occurs against the local cache, greatly increasing the speed of response.

## **IBM Cognos Analysis for Microsoft Excel**

IBM Cognos Analysis for Microsoft Excel is intended for users working in global networked environments. It is the client of choice for users who primarily employ Microsoft Excel for analyzing TM1 information and build their own custom layouts using native Microsoft Excel functionality. Cognos Analysis for Microsoft Excel is also beneficial for users who need to access both Cognos TM1 and Cognos Business Intelligence data from the same Excel client interface.

Cognos Analysis for Microsoft Excel offers the following benefits:

- Optimized for wide area networks (WANs).
- Provides a familiar spreadsheet environment that does not require a power-user level of knowledge in Excel to analyze and contribute to Cognos TM1 data.
- Combines the capabilities of Microsoft Excel with a drag and drop approach to analyzing Cognos TM1 cubes.
- Provides a flexible "range-based" mode that lets you add formats and user calculations directly within a spreadsheet.
- Provides native access to TM1 data objects, such as cubes, views, dimension subsets, aliases, and sandboxes.
- Provides the ability to combine read/write Microsoft Excel-based TM1 Planning with read-only analysis against Cognos Business Intelligence data sources in the same spreadsheet interface.

For more information, see the *IBM Cognos Analysis for Microsoft Excel User Guide* in the IBM Knowledge Center.

## **IBM Cognos TM1 Application Web**

IBM Cognos TM1 Application Web is a zero-footprint web client that allows you to open and work with Cognos TM1 Applications using any supported web browser. From the Cognos TM1 Application Web workflow page, you can open a node, take ownership, enter data, and contribute to a plan. Cognos TM1 Application Web is most useful when a corporate policy prohibits the installation of a local client, or when using an operating system other than Microsoft Windows, as all TM1 thick clients are Windows-based.

## **IBM Cognos TM1 Web**

IBM Cognos TM1 Web is a zero-footprint web client that allows you to analyze and modify Cognos TM1 data from any supported web browser. Cognos TM1 Web does not allow you to access the Cognos TM1 Application Web workflow page. Consequently, you cannot participate in Cognos TM1 Applications with TM1 Web.

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## **Administration clients**

These IBM Cognos TM1 clients can be used to administer your Cognos TM1 data and models.



## **IBM Cognos TM1 Performance Modeler**

IBM Cognos TM1 Performance Modeler is the newest Cognos TM1 modeling tool, which lets you quickly create or generate dimension, cubes, rules, processes, and other objects. Performance Modeler simplifies the modeling process by automatically generating the rules and feeders required for your applications. Performance Modeler also introduces guided import, a simplified process for importing data and metadata into a TM1 server. Performance Modeler should be used as the primary development and maintenance tool for all new and existing Cognos TM1 models.

## **IBM Cognos TM1 Architect**

IBM Cognos TM1 Architect is an older Cognos TM1 modelling tool that supports the creation and maintenance of all TM1 objects. TM1 Architect does not support automatic feeder and rules generation, and does not provide guided import capabilities. Architect users are encouraged to transition to Cognos TM1 Performance Modeler as the primary development environment for all TM1 models.

## **IBM Cognos TM1 Perspectives**

IBM Cognos TM1 Perspectives is the TM1 Excel Add-In. Cognos TM1 Perspectives is an older tool that can be used for both Cognos TM1 model development and for analyzing data via Microsoft Excel capabilities. Like Cognos TM1 Architect, Perspectives supports the creation and maintenance of all TM1 objects, but does not provide the advanced capabilities of Performance Modeler. End-users that require an Excel Add-In interface and the ability to use Microsoft Excel functionality, such as charting, while working with TM1 data can use Perspectives. Otherwise, administrators are encouraged to transition to Performance Modeler as the primary development environment for all TM1 models.

## **IBM Cognos TM1 Operations Console**

IBM Cognos TM1 Operations Console is a web-based operations tool that is designed to facilitate the monitoring, support, and management of Cognos TM1 servers, providing greater insight into day-to-day server operations. The Cognos TM1 Operations Console allows you to dynamically monitor threads running on multiple TM1 servers at a given time. You can sort and filter thread activity, as well as schedule logging of server activity. The Operations Console also provides a health check feature which determines the current state of each TM1 server being monitored. The Operations Console should be the interface of choice for Cognos TM1 administrators who are managing an enterprise-scale TM1 environment.



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## Chapter 1. Getting Started with Cognos TM1 Applications

IBM Cognos TM1 Applications is the comprehensive infrastructure used to power and manage Cognos TM1 planning applications.

Use Cognos TM1 Performance Modeler to design the cubes and dimensions that define your data. Then you can construct a Cognos TM1 Application to manage workflow of that data such as contributing to a plan or reviewing changes. The Cognos TM1 Applications portal is the launch pad for the activity around the application. It is managed by the Cognos TM1 Applications server which provides the web access to the applications. You can choose a variety of different clients to use when working with the applications.

Cognos TM1 Applications serve as the basis for organizing and managing applications. Application modelers offer the choice of using Cognos TM1 Application Web, Cognos Insight in distributed or Cognos Insight in connected mode to contribute to their applications. In addition, Cognos TM1 Performance Modeler can be launched from Cognos TM1 Applications and is used by modelers to plan and build the data structures on which applications are based.

Each of the clients available through Cognos TM1 Applications has advantages, and the modeler makes the determination of which to offer based on several factors.

### **Cognos Insight**

- Cognos Insight offers a flexible and interactive experience with a choice of distributed or connected modes.
- In its distributed mode, Cognos Insight uses an interactive canvas layout for planning and analysis applications that provides responsive, rapid discovery and navigation.
- Since calculation and query processing in a distributed architecture occurs locally only after the slice of data downloads, administrators can deploy Cognos Insight applications to more distributed users from the same central server hardware.
- Cognos Insight cannot be used on applications that contain websheets.

### **Cognos TM1 Application Web**

- Cognos TM1 Application Web is a good choice when you need a high degree of formatting or when you do not want to install the Cognos Insight component on your local machine.
- Cognos TM1 Application Web offers the rich formatting provided by websheets, in addition to slices and other detailed navigation of cube data.
- Applications that use a canvas layout show a simple multi-tabbed view when used with Cognos TM1 Application Web.

Either Cognos Insight (in either distributed or connected mode) or Cognos TM1 Application Web can be used interchangeably if the application uses cube views alone and has multiple sandboxes disabled. You can select which client you want to use on these applications.

To choose a client, select the application and right-click to display the clients available for that application.

To get started using the product you can find sample applications in the samples folder as zip files which can be imported for GO\_New\_Stores. There are also some .cdd files in the Proven Techniques folder which are used with Cognos Insight.

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## Set preferences


Specify preferences for IBM Cognos TM1 Application portal, including the number of entries in the list view, type of separator, and style.

You can also change the portal layout of the view, number of columns, and regional options including language and time zones.

### About this task

You can only set preferences from the TM1 Application portal if you are using native security. If your TM1 server is CAM authenticated (IBM Cognos Access Manager), preferences are inherited from CAM.

### Procedure

1. Open a Web browser. Type the Web address supplied by your administrator in the address bar, typically `http://<server_name>:<port_number>/pmpsvc`
2. Type in your user ID and password and click **OK**.
3. Click the **My Preferences** button  and specify the settings you want to change.

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## Open Cognos TM1 Applications

Open an application in the Cognos TM1 Applications portal to begin reviewing or contributing data.

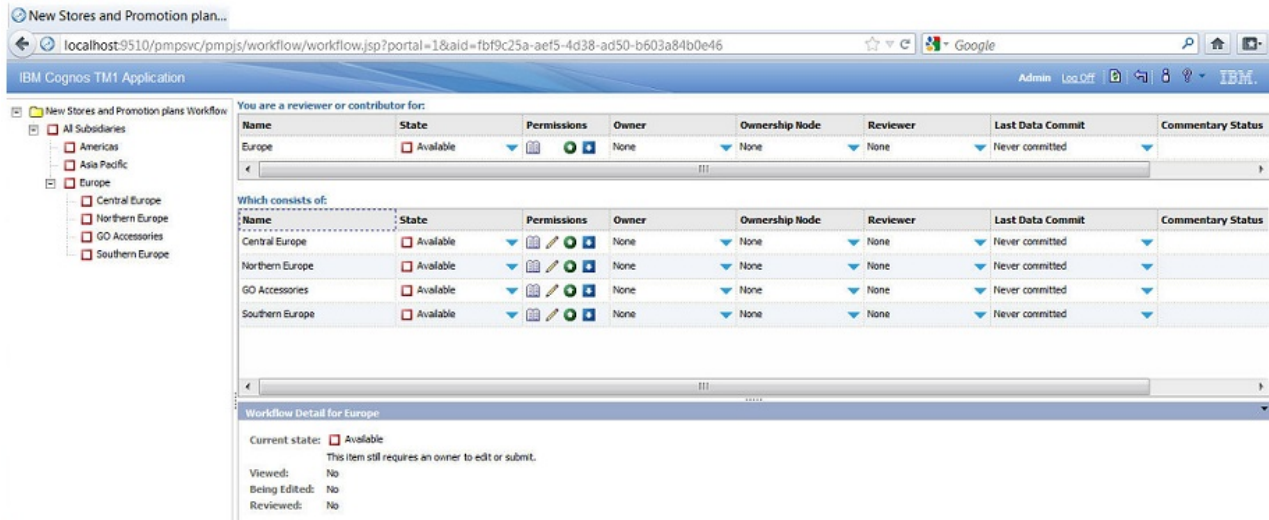
To start reviewing or contributing data, you must have an intranet or Internet connection and an application.


### Procedure

1. Open a Web browser. Type the Web address supplied by your administrator in the address bar, typically `http://<server_name>:<port_number>/pmpsvc`, for example `http://localhost:9510/pmpsvc`
2. Type in your user ID and password for the server you want to use and click **OK**.
3. Click on the application to which you want to contribute.

The application displays in the My Applications portal. Before you can use it the application must be activated. An administrator may need to do that, or if you are an administrator for this application, click on the **activate**  icon. Then click the application to open it.

On the workflow page, you see a graphical overview of all the areas for which you are responsible and the status of the data.



To open the sample application, click the import an application icon  in the Cognos TM1 Applications portal, identify the server as GO\_NEW\_Stores, and the application file as "new stores and promotion plans.zip" which is found in the C:\install\_directory\samples\tml\GO\_New\_Stores location. Click **Import the sample application** and return to the portal. You may see a warning that no commentary was saved. This is correct because the sample application does not have any commentary. Click **OK** to accept that warning.

4. To start using Cognos TM1 Applications, in the tree on the left side of the screen, expand the approval hierarchy tree to select a node or click on a node in the table.

**Tip:** To see the details panel for more information about a node, click the blue down arrows.

## Cognos TM1 Applications Workflow

The Workflow screen displays when you log on. It consists of a tree, a table, and approval hierarchy.

The tree on the left side of the screen shows, in a hierarchical form, the areas that you are responsible for contributing to and reviewing. The exact items you see in the tree depend on your specific rights in the application. When you click an item in the tree, a table with the details for the item displays on the right side of the screen.

An item in the tree or table is known as a node. Typical examples are Sales Division, Marketing Division, Development Division, and Cost Center. The names depend on the design of your application.

### Application types

There are three types of application, described in the following table. The application type determines which workflow states are applicable.






Table 1. Application types

Application type	Description
Approval	Based on a reporting structure for a business, department, or enterprise. After a change has been submitted, the report is locked for any new changes until the approving person has rejected the change. All the workflow states apply to the approval application type
Central	No reporting structure. All users have equal rights and changes cannot be locked. The Central application type is used by a small group of users who equally share the task of performing central planning or analysis. The ability for a user to take ownership is determined by the administrator.
Responsibility	Based on a reporting structure. The user cannot submit a node to lock it. This type of application is typically used with rolling forecasts or continuous planning processes where there is no defined end date. Changes can be made without having to be submitted and approved.

## Workflow states

Each item in the tree has an icon that indicates the current state of the data.


Table 2. Cognos TM1 Applications Workflow States



Icon	State and description
	Available The node has not been opened and the data has not been changed or saved.
	Reserved The user has taken ownership of the node and data in this state can be submitted for review.
	Locked The data was submitted and the item was locked. Data in this state is read-only. If an item is rejected, its state returns to Reserved.
	Incomplete At least one item belonging to this item is <b>Available</b> , and at least one other item is in a state of <b>Reserved</b> , <b>Locked</b> , or <b>Ready</b> . Data in this state was aggregated. The <b>Incomplete</b> state applies only to review items.
	Ready All items belonging to the reviewer are locked. The data is ready to be submitted to the next level in the hierarchy.



## Review Data

You are responsible for reviewing the nodes as identified on the Workflow screen.

When you have appropriate rights to nodes, you can view them in any state. You can view more than one node at a time, but each node that you open from the Workflow page opens in a separate window. If you have the appropriate rights for a consolidated node, you can view, edit and submit data for all of the related leaf nodes right in the same grid window by using the approval dimension drop-down list to switch between the nodes in the hierarchy.

When a node has been submitted for review, it becomes **Locked** .

If you are not satisfied with the contents of a node, and you have appropriate rights, you can reject it, either from the workflow screen, or from the grid by clicking the **Reject** button . The state of a rejected node changes from **Locked** to **Reserved** .

When you have submitted all contribution nodes in a review, it has a Ready state . If you are satisfied with all the contents, submit the node .

If your administrator has enabled the display of translated names on your TM1 server, then cubes, dimensions, elements, and attributes will display in your local language as determined by the language setting of your Web browser. If translation is not enabled, object names appear as they were originally created on the TM1 server. In Websheets, only elements returned by SUBNM or TM1RptRow functions are translated. All other element and object names in Websheets display as originally created.

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## Submit Data

You submit a node to the next reviewer in the planning model hierarchy when you are satisfied with the data it contains. You only submit data in an Approval application.

After you submit the node, it is locked and you can make no further changes to the data. The reviewer can either accept or reject the changes that you made to the node.

To submit data, you must have submit rights. If your administrator has enabled multiple sandboxes you cannot submit your node from the workflow page. If you are using multiple sandboxes you must select the sandbox you want to submit in Cognos TM1 Application Web.

Depending on the current node you are working with and the rights you have for that node, you can submit a single leaf node, multiple leaf nodes or a consolidated node.

### Submitting a consolidated node or a single leaf node

Use the submit icon to submit a consolidated node or a single leaf node.

#### Procedure

From the toolbar click the **Submit** icon .

## Submitting all leaf nodes under a consolidated node

Use the Submit Leaf Children option to submit all leaf nodes under a consolidated node.

### Procedure



From the toolbar, click the **Submit leaf children** icon .

**Note:** This action submits only the leaf nodes to which you have the appropriate rights.

## Submitting all leaf nodes and a consolidated node

If you are the owner of a consolidated node and related leaf nodes, and want to submit both the consolidated and leaf nodes at the same time, you must perform the steps separately.

### Procedure

1. From the toolbar, click the **Submit leaf children** icon .
2. From the toolbar, click the **Submit** icon .

---

## Ownership, Bouncing, and Releasing

Once you have taken ownership of a node, other users cannot access its data.

After taking ownership, use Release ownership to release the data so other people can use it .

In TM1 Application Web, you must submit all nodes at the level at which you take ownership and you can only release ownership at the level you have taken ownership. For example, if you have taken ownership of a parent node, then decided that you wanted to submit a child node individually, you would first have to Release your ownership of the parent node, then take ownership of the child node in order to submit only the child node. You could then Release ownership of the child node and re-take ownership of the parent node.

If you attempt to take ownership of a node that is currently owned by another user, the system can provide a warning message and offer the opportunity to cancel out of taking ownership. Warning messages are configured by the administrator.

An administrator can see who has ownership and determine which owner should be released. This "bouncing" behavior can also be controlled per application.

The modeler or administrator of your system can tell you how your system or applications is designed to handle bouncing and releasing.

The **Ownership Change Behavior** property set in IBM Cognos TM1 Performance Modeler determines the way the system responds when this specific application is released. Depending on that setting, you may see the following behaviors:



**Never warn**

Users may take ownership from one another freely, and no warnings are raised.

**Warn on active user**

Display a warning if the current owner has the node open in a client, but permit the change of ownership ("bouncing") to proceed if the warning is ignored.

**Prevent bouncing of active user**

Display a warning if the current owner has the node open in a client, and block the change of ownership--do not let the "bounce" occur.

**Always warn**

Display a warning if the node for which the user is attempting to take ownership is already owned by another user, regardless of whether the current owner is in the system or not. Permit the change of ownership to take place if the user continues.

**Always prevent ownership change**

Display a warning if the node for which the user is attempting to take ownership is already owned by another user, regardless of whether the current owner is in the system or not. Never let the change of ownership proceed. In this situation, the current owner must Release their ownership before another user may attempt to take ownership.

These settings are available regardless of the client used. When users have ownership, an administrator can click the Release Ownership icon on the workflow page to display a dialog box that lists the current owners of nodes. The administrator can then choose which user to release.

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## Email notifications

Email notifications can be configured for applications by an administrator.

Emails can be delivered to your email delivery service. You can also read the notifications through the Inbox that can be accessed from both Cognos Connection and the Cognos TM1 Applications portal:

- From the Cognos TM1 Applications portal toolbar, click the My inbox icon.
- From Cognos Connection, the Inbox is found on the "My Area Options" drop-down menu.

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## Adding commentary to Cognos TM1 Applications

Commentary refers to annotations and attached documents to provide details and background to your budget and plan submissions.

You can add commentary at the node or cell level on an IBM Cognos TM1 application.

The application modeler can configure the commentary parameters to restrict the type and size of files that can be attached to an application.

Administrators can also purge commentary that is based on application, user, or dates.

### Procedure

1. Open a workflow in the Cognos TM1 Applications portal.
2. Click the down arrow to populate the pane with the commentary review list. If the node already has annotations or comments, they are listed in order of input.
3. To attach a file, click the **Attachment** button to browse for the file to attach. When the type of file or the size of files that you can attach is restricted, you cannot attach those kinds of files.

## Adding commentary at the cell level

A small red triangle in the corner of a cell indicates that the cell has commentary that is attached to it.

### Procedure


1. Open the application.
2. Right-click the workflow and click the client that you want to use.
3. Right-click the cell that you want to annotate and click **Comment**, or, if the cell already has comments, click **Browse All Comments**.
4. Type the text for the comment.

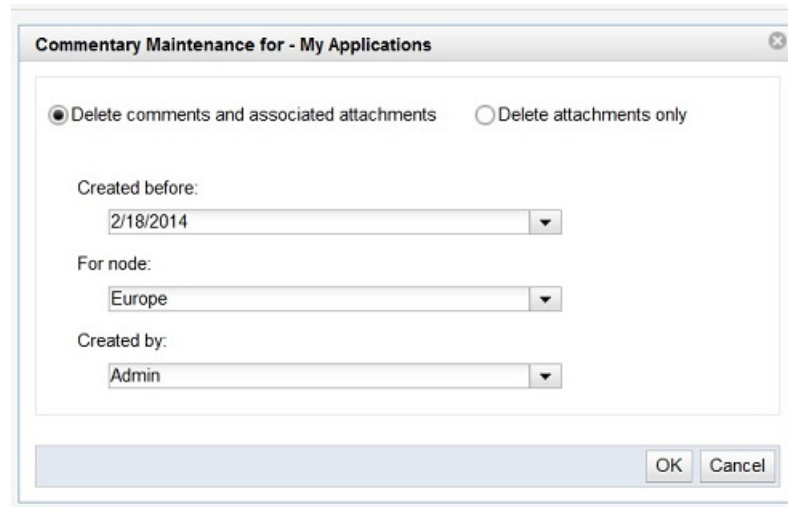
---

## Purging Commentary

You can identify commentary to be purged using a variety of criteria. You can purge commentary for more than one application at a time. You must be an administrator to purge commentary.

### Procedure

1. In the Cognos TM1 Applications portal, click the selection box of the applications for which you want to remove their commentary. If you select more than one application, the only criterion available is the "Created before" date. Only current users are available in the field. To purge commentary by obsolete users, use the **Created by** or **node**-based filter.
2. Click the **Commentary Maintenance** icon .
3. Specify the commentary to delete by using the **Created before**, **For node**, and **Created by** selections. You can also elect to delete comments and attachments or just the attachments. The nodes and users for this application are available on the pull-down menu.



*Figure 1. Commentary Maintenance*

Adding more than one criteria is treated as an add operation. So in the example in the figure, only commentary that was created before 2/18/2014 and was in the Europe node and was created by the Admin is purged.

4. When you have the correct commentary identified, click **OK**.

**Note:** You cannot purge commentary using the command line interface.





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## Chapter 2. Working with Data


Adding or editing data in the web client allows you to submit information to your datastore. To modify data, your system administrator must grant you access.

Data that you can edit has a white background. Read-only data has a gray background. If you are not the current owner, the data opens in a read-only view.

To start adding or editing data, click **Take Ownership** .

You can edit data only if it has a workflow state of **Available**  or **Reserved** . The icons indicate the workflow state.

Ownership availability for a particular node can be changed depending on how the parent node is opened. For example, contributors and reviewers who open the parent node in IBM Cognos Insight are not able to take ownership of the node. See the *IBM Cognos TM1 Performance Modeler Guide* and *IBM Cognos Insight Guides* for details on ownership and nodes.

After taking ownership, use the **Release**  icon to release the data so other people can use it. In Cognos TM1 Application Web, you must submit all nodes at the level at which you take ownership and you can only release ownership at the level you have taken ownership. For example, if you have taken ownership of a New England node, then decided that you wanted to submit a child node such as Massachusetts individually, you would first have to Release your ownership of the New England node, then take ownership of the Massachusetts node in order to submit only the Massachusetts node. You could then Release ownership of the Massachusetts node and re-take ownership of the New England node.

If you attempt to take ownership of a node that is currently owned by another user, the system can provide a warning message and offer the opportunity for the user to cancel out of taking ownership. Warning messages are configured by the administrator.

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## Parts of the Workspace

The workspace is comprised of multiple parts.

The following parts are found in the workspace:

- **Tabs**  
A separate tab represents each view in the application.
- **Dimension Bar**  
Toolbar area that shows the dimensions that are in the rows, columns, and context.
- **Dimensions**  
Each dimension displays as a collection of related data, such as products or dates.
- **Grid**  
The area where you add or edit data at the intersection of a column and row.
- **Grab Handles**

Specific area where you can grab a dimension or tab to move it around the grid.

## Tabs

A tab is a collection of dimensions and that represents a view. Each tab typically contains a specific dimension that is not common to other tabs.

Usually, this dimension defines the function of the tab. However, tabs also share common dimensions, such as months, budget versions, and divisions that are often used to filter the grid.

## Dimensions

Dimensions define the grid of the tab, forming the rows, columns, and context. A dimension is a list of related items that often include calculations.

Dimensions can include lists of departments, products, customers, months, and profit and loss or balance sheet line items.

All dimensions within a tab determine the information shown in the grid. While dimensions in rows or columns display all of the items in their lists, context dimensions filter the grid to display only information for the active item.

### Row and Column Dimensions

The row and column dimensions are shown on the Dimension Bar.

Placing a dimension into a row or column displays each of its list items as a heading, and a cell is created for every intersecting row and column.

### Basic Layout

The basic layout has one row and one column dimension on the dimension bar.

The screenshot shows the TM1 grid interface. At the top, there are tabs for different categories: Travel Costs, Supply Costs, Comm Costs, Marketing, and Corporate Expenses. Below the tabs, there are three sections: Rows, Columns, and Context. The Rows section has a dropdown menu with '[1 Travel Costs]'. The Columns section has a dropdown menu with '[4 Months]'. The Context section has three dropdown menus: 'Sales [2 EList (Departments)]', 'Americas [2 Divisions]', and 'Budget version 1 [5 Versions]'. Below these sections is a grid with columns for months (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec) and a 'Full Year' column. The rows are labeled with various travel-related items: Purpose, No of Nights, Hotel per night, Meals & Ent per night, Accomodations, Meals & Entertainment, Plane, Train, Bus, Vehicle rentals, Taxis, and Travel (sub-total). The grid is currently empty, with only the 'Purpose' row having a small cell in the 'Jan' column.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Full Year
Purpose													
No of Nights													
Hotel per night													
Meals & Ent per night													
Accomodations													
Meals & Entertainment													
Plane, Train, Bus													
Vehicle rentals, Taxis													
Travel (sub-total)													

### Nested Layout

Nesting dimensions on the rows or columns increases the amount of data visible on the grid and lets you view more specific information. For example, the following grid has two dimensions nested on the rows.

Travel Costs

**Supply Costs**

Comm Costs

Marketing

Corporate Expenses

Rows:

[1 Supply Costs]

[5 Versions]

Columns:

[4 Months]

Context:

Sales

[2 EList (Departments)]

Americas

[2 Divisions]

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Full Year
Supplies (sub-total)	Budget version 1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Budget version 2	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual prior year 1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual prior year 2	0	0	0	0	0	0	0	0	0	0	0	0	0
Supplies: computer supplies	Budget version 1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Budget version 2	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual prior year 1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual prior year 2	0	0	0	0	0	0	0	0	0	0	0	0	0
Supplies: office supplies	Budget version 1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Budget version 2	0	0	0	0	0	0	0	0	0	0	0	0	0
	Actual prior year 1	0	0	0	0	0	0	0	0	0	0	0	0	0

**Note:** Each parent dimension item of a nested row or column contains repeated child dimension items. Each dimension added to a row or column multiplies the number of rows or columns by the number of items in the nested dimension.

## Context Dimensions

Context dimensions do not appear on the rows or columns but filter the context of the grid. While row and column dimensions display all of their list items in the grid, context dimensions limit the items in the grid by displaying only information related to the active item in the dimension.




Multiple context dimensions may exist, and each context dimension filters the information in the grid cumulatively. You can change the context of the grid by changing the context dimensions on the Dimension Bar.







Using rows and columns alone to find specific data may decrease readability. Using context dimensions alone to view general data may also limit readability. By nesting dimensions and filtering context you can make data entry and grid navigation easier.

## Using the toolbar












The IBM Cognos TM1 Application Web toolbar buttons provide shortcuts to commonly used commands.

The following table describes each button in the toolbar.

Icon	Button Name	Description
	Take ownership	To make changes to data, you must first take ownership.
	Release ownership	After taking ownership, Release ownership allows other users to access the data.
	Submit	Submitting data makes it public, locks the node from further changes, and promotes the contribution to the reviewer.

Icon	Button Name	Description
	Submit leaf children	Submits all leaf nodes to which you have the appropriate rights for the current consolidated node.
	Reject	As a reviewer, you can reject a submitted contributions.
	Commit	Committing data makes it public, but does not lock it from additional changes.
	Export and Reset	<p>Opens a menu with the following items:</p> <ul style="list-style-type: none"> <li>• <b>Export.</b> Exports data in the following formats: <ul style="list-style-type: none"> <li>– <b>Slice to Excel</b> - Exports data and formulas (SUBNM and DBRW functions) to a new Excel spreadsheet. The spreadsheet maintains a connection with the server. To <b>Slice to Excel</b> you must have Microsoft Excel installed on the web server.</li> <li>– <b>Snapshot to Excel</b> - Exports data to a new Excel spreadsheet, excluding the formulas (SUBNM and DBRW functions). The spreadsheet does not maintain a connection with the server.</li> <li>– <b>Export to PDF</b> - Exports data to a PDF file. You must install a PostScript printer for the Export to PDF option to work. For details, see the <i>Installation Guide</i>.</li> </ul> </li> <li>• <b>Reset Data.</b> Resets the data. You can save or discard any changes you make to the data or layout. Any changes you make are kept the next time you open Cognos TM1.</li> <li>• <b>Reset View.</b> You can Reset Current View, Reset All Views, Reset Tabs, Reset Both Views and Tabs/.</li> </ul> <p>For more information on exporting data, see Chapter 5, “Exporting Data,” on page 45.</p>
	Copy	Copy data to duplicate it in other cells.
	Paste	Paste copied data into cells.

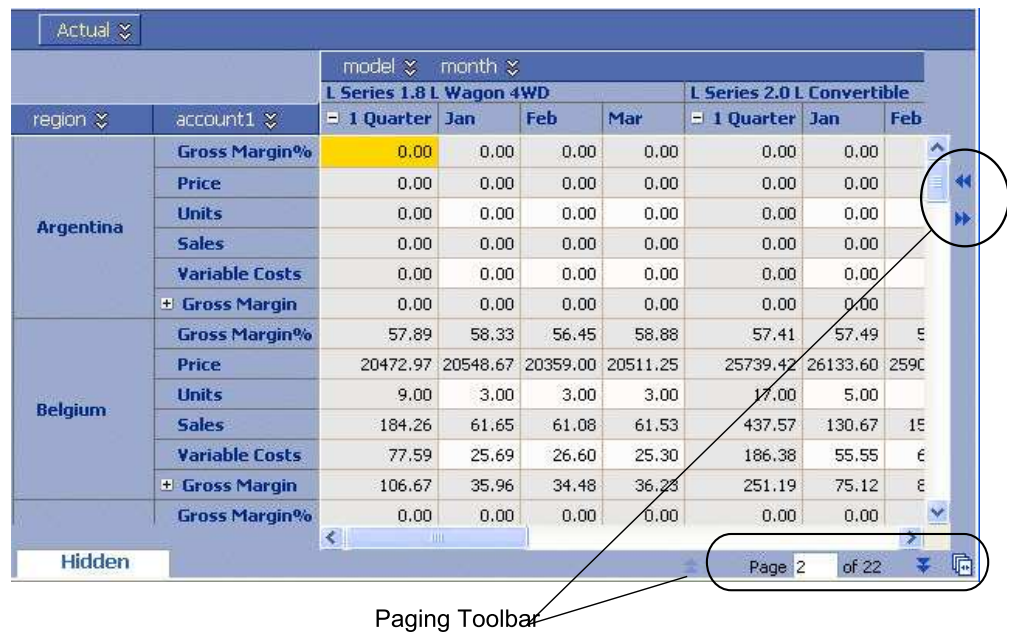


Icon	Button Name	Description
	Undo	Undo the last data change. Remember that many data change actions can have an effect beyond the cells that are visible. Consolidated values, rule-calculated values, cells included in Data spreading, or even cells in different views can all be changed as a result of making a data value change in one cell. When you undo these actions, all effected values are also changed, even in cells not visible on the active screen.
	Redo	Once a data change has been undone, you can restore the change.
	Swap rows and columns	Swap rows and columns to have the dimension on the row switch with the dimension on the column.
	Recalculate	Updates and recalculates data in the view. Data changes are not committed back to the server until the data is committed or submitted.
	Suppress Zero Values	Suppress Zero Values Suppresses Zeros on Rows Suppresses Zeros on Columns
	View Grid	Displays the data in a grid format.
	View Chart and Grid	Displays the data in both grid and chart formats.
	View Chart	Displays the data in a chart format.
	Chart Properties	Displays the Chart Type menu options.
	Recalculate	Updates and recalculates data in the view. Data changes are not committed back to the server until the data is committed or submitted.
	Sandbox	Create sandboxes to work with data in different versions.







## Navigating Pages

You can move from one part of a large cube view to another by navigating the pages.

A Paging toolbar is provided with navigation buttons and a Page indicator. In the cube view, the visible portion of the grid is the first of seven pages.



The following table contains the Paging toolbar buttons and indicator with their descriptions.

Button or Indicator	Name	Description
	Display Pages	Displays the TM1 View Page Layout dialog box with a layout of all pages. Click a page, and click <b>Goto Page</b> to navigate to a specific page. For example, click <b>Page 4</b> , and click <b>Goto Page</b> to navigate to page 4.
	Previous Page (Rows)	Shows the previous page of rows.
	Next Page (Rows)	Show the next page of rows.
	Next Page (Columns)	Shows the next page of columns.
	Previous Page (Columns)	Shows the previous page of columns.
	Page Indicator	Displays the current page and the total number of pages of cells in the view.

---

## Editing and Replacing Data

You can edit data in leaf cells, providing you have Write access to those cells.

Leaf cells appear with a white background.

### Procedure

1. Edit a value in a white cell in one of the following ways.
  - **Replace the value** - Click a value in a white cell and the cell becomes highlighted indicating that it is in Edit mode. You can then replace the existing value in the cell by typing over it.
  - **Edit the value** - Double-click a value in a white cell and the cell becomes bordered with white background and a blinking cursor. You can now selectively edit the existing value by using the left and right arrow keys on your keyboard to position the cursor within the value. You can also use the Backspace and Delete keys to remove single numbers from the value.
  - **Pick a new date value** - If a cell is formatted as a date, double-click the cell then use the calendar to select a new date. Double-clicking also puts the cell in edit mode, so you can alternatively enter a new date directly in the cell.

Formatting is determined by the format attributes that are applied to the elements that identify a cell. For details, see “Element Attributes” in the *IBM Cognos TM1 Developer Guide*.

When you type a value into a cell that has Wrap Text enabled, the row height expands as required to fit the new value. If a cell has Wrap Text enabled, **but** is merged into other rows/columns or has a custom height set on the row, the row height does not expand.

2. After entering a new number, press **Enter**. The grid refreshes to display the new data, all new and unsaved data displays blue.

If you enter or change data and click on another cell, the grid does not refresh and the changed data displays green.

---

## Copying and Pasting Data

Copy commands copy a value or operation to different locations and columns on a single tab.

Copy commands only apply to cells of the same type as the original cell. These commands only apply to the current grid. These commands apply to breakback (spreading) cells, but do not apply to nested, hidden, or collapsed dimensions.

You can combine copy and data entry commands, however, do not use them with the Grow command.

The following table lists the quick copy commands.

Command	Description	Action
>	Copies right	Example: 5> Copies the number 5 to the right Example: inc6> Increases the row by 6% for each value to the right
<	Copies left	Example: add15< Adds 15 to each value in the row to the left
<>	Copies left and right across the entire row	Example: <>5 Copies the number 5 left and right across a row
^	Copies up and down in a column	Example:  ^5 Copies the number 5 up and down in a column
	Copies down	Example: 3  Copies the number 3 down the column
^	Copies up	Example: hold^ Holds the cell values up the column Example: 2>^ Copies the number 2 to the right and up the column

## Quick Data Entry Commands

Typing a data entry command in a cell performs an action on the cell value.

Data entry commands are processed when you press Enter. These commands only apply to the current grid.

These commands are not case-sensitive.

You can use commands across two dimensions, but not across pages.

The following table lists the quick data entry commands.

Command	Description	Action
K	Enters the value in thousands.	Example: 5K Enters 5,000

Command	Description	Action
M	Enters the value in millions.	Example: 10M Enters 10,000,000
Add, +	Adds a number to the cell value.	Example: Add50 Adds 50 from the cell value
Subtract, Sub, ~	Subtracts a number from the cell value.  <b>Important:</b> A minus sign (-) is not permitted for subtract because this indicates a negative number.	Example: sub8 Subtracts 8 from the cell value
Percent, per	Multiplies the cell value by a number added as a percentage.	Example: per5 Gives 5% of the original cell value
Increase, Inc	Increases the cell value by a number added as a percentage.	
Decrease, Dec	Decreases the cell value by a number added as a percentage.	Example: decrease6 Decreases the cell value by 6%
GR	Grows cells by a percentage.	Example: GR>150:10 Increases the value by 10 percent starting with a value of 150.
Hold, Hol, H, HC	Holds the cell value from breakback calculations. HC holds the consolidated level.	
Release, Rel, RH, RC	Releases held cells.	
RA	Release all held cells.	

## Using Shortcuts in Different Clients

There are shortcut keys available in the IBM Cognos TM1 Application Web client.

The following table shows the shortcut keys available in the IBM Cognos TM1 Application Web client and in Cognos TM1 . Note that not all shortcuts available in IBM Cognos Planning Contributor are also available in Cognos TM1 . See also the notes at the end of the table for important information about using shortcut keys.

Cognos Application Web	Cognos TM1
Add10	P+10
Sub10	P~10
Increase10	P%+10
Decrease10	P%~10
Percent10	P%10
Add10> or >Add10	R+>10
Sub10> or >Sub10	R~>10
Increase10> or >Increase10	P%+>10
Decrease10> or <Decrease10	P%~>10
Percent10> or >Percent10	P%>10
>10	R>10
10>	R>10
>10K	R>10000
>10M	R>10000000
10Grow100Compound>	GR>10:100
10Grow100Linear>	GR>10:100
10Gro100Com>	GR>10:100
10Gro100Lin>	GR>10:100
10G100C>	GR>10:100
10G100L>	GR>10:100
10Grow100>	GR>10:100
1K	1000 (The number ending in K is multiplied by 1000 at the client end and returned to the server)
1M	1000000 (The number ending in M is multiplied by 1000000 at the client end and returned to the server)

- When a shortcut such as 10K is entered, the numbers are multiplied by 1000, or 1000000 at the client end and then the shortcut is converted to the equivalent spreadcode.
- The Cognos TM1 spreadcodes cannot be used in combination with Cognos Planning Contributor shortcuts. For example, P%Add10 or R%Add10 are not allowed. Also, Cognos Planning Contributor shortcuts cannot be used in combination with Cognos TM1 shortcuts. For example, Add10Sub20 is an invalid entry.
- The Cognos Planning Contributor shortcuts of Multiply, Divide, Power and Reset are not available in TM1.
- All Grow commands whether Compound or Linear, are converted to the Cognos TM1 GR spreadcode command. GR command can only do a Linear Growth
- The direction of spread can be entered at the start or the end of the shortcut. Shortcut strings with the direction in the middle are invalid. For example, Add10> or >Add10 are correct, but Add>10 or Add1>0 are invalid.
- All shortcut codes are *not* case sensitive. For example, add10, Add10, or aDD10 produce the same result.

---

## Using Data Spreading

You can use data spreading to enter or edit numeric data using a predefined distribution method, called a data spread method.

For example, you can evenly distribute a value across a range of cells, or increment all values in a range of cells by a percentage. For details on data spread methods, see “Using Data Spreading” in the *IBM Cognos TM1 User Guide*.

### Procedure

1. To spread data, right-click a cell and click **Data Spread**.
2. From the Spreading menu, select any data spread method.

**Note:** TM1 Web saves the spread values to the server. You do not need to submit the data after TM1 Web completes the spread.

## Applying a Data Spread across Multiple Leaf Nodes from a Consolidated Node

When you are the owner of a consolidated node and related leaf nodes, you can use data spreading from the consolidated node level to update the cell values in multiple leaf nodes without having to separately open and edit each leaf node.

The new values are proportionately applied only to the underlying leaf nodes to which you have rights. Cells in the leaf nodes to which you do not have rights are not updated.

For example, if you have ownership rights to the hierarchy for the North America, US and Canada nodes, you can perform a data spread on a consolidated cell in the North America node and the new values will be applied to the related cells in the US and Canada leaf nodes.

### Procedure

1. Open a consolidated node in the data grid.
2. Right-click on a consolidated cell and click **Data Spread**.
3. From the list, select a data spread method.

## Excluding Cells from Data Spreading

You can apply a hold to cells to prevent those cells from being affected by data spreading. You can still edit held cells.

The holds apply only to the user initiating the feature; other users can edit held cells.

### Apply a hold to a single cell or range

You can apply a hold to a single cell or range.

#### Procedure

1. Select the cell or range.
2. Right-click the cell or range.
3. Click **Holds, Hold Leaves**.

#### Results

Each held cell displays a red triangle in the lower-left corner as a visual indication that you applied a hold to that cell or range. When you log off, all holds are released.

### Release a hold on a single cell or range

You can release a hold on a single cell or range.

#### Procedure

1. Select the cell or range of cells.
2. Right-click the cell or range.
3. Click **Holds, Release Leaf Holds**.

#### Results

The released cells can accept values from data spreading operations.

**Note:** To release all holds that you applied to all cubes, right-click any cell in any cube, click **Holds, Release All Holds**.

## Excluding Consolidations from Data Spreading

You can hold the value of a consolidation constant while adjusting the underlying leaf values. For example, when performing a what-if analysis you might want to hold a value constant while changing the values of the leaves.

When you apply a consolidation hold and change the value of its leaf elements, proportional spreading is applied to the remaining leaf values so that the consolidation value remains unchanged.

### Apply a consolidation hold to a single cell or range

You can apply a consolidation hold to a single cell or range.

#### Procedure

1. Select the cell or range.
2. Right-click the cell or range.
3. Click **Holds, Hold Consolidate**.



## Results

Each held consolidation displays a red triangle in the lower-left corner of a cell as a visual indication that you applied a hold to that cell or range. When you log off, all holds are released.

## Release a consolidation hold on a single cell or range

You can release a consolidation hold on a single cell or range.

### Procedure

1. Select the cell or range of cells.
2. Right-click the cell or range.
3. Click **Holds, Release Consolidate**.

## Results

The consolidated value can now reflect any changes that you make to the underlying leaf values.

**Note:** To release all holds that you applied to all cubes, right-click any cell in any cube, click **Holds, Release All Holds**.

---

## Filtering a Cube View

You can filter data in a cube view that contains a single row dimension and one or more column dimensions.

When you have two or more dimensions along the columns, you can filter only from the innermost dimension, that is the dimension closest to the view grid.

### Procedure

1. Click the column element that contains the values that you want to filter.
2. Select a filter.
  - **Pre-defined filter** - Top 10, Bottom 10, Top 10 Percent, Bottom 10 Percent. The filter is immediately applied to the view.
  - **Advanced** - You can define a custom filter by setting filter parameters in the Filter dialog box, as described in the following steps.
3. Select a **Filter** type.

Filter Type	Description
TopCount	Filters the view to display only the largest n elements, where n is a number specified in the Value option.
BottomCount	Filters the view to display only the smallest n elements, where n is a number specified in the Value option.
TopSum	Filters the view to display only the largest elements whose sum is greater than or equal to n, where n is a number specified in the Value option.

Filter Type	Description
BottomSum	Filters the view to display only the smallest elements whose sum is greater than or equal to n, where n is a number specified in the Value option.
TopPercent	Filters the view to display only the largest elements whose sum is greater than or equal to n, where n is a percentage of the dimension total specified in the Value option.
BottomPercent	Filters the view to display only the smallest elements whose sum is greater than or equal to n, where n is a percentage of the dimension total specified in the Value option.

4. Enter a numeric value in the **Value** box.
5. Select a **Sort** order to display the dimension elements in the Cube Viewer in ascending or descending order.
6. Click **OK**.

## Results

A small funnel icon displays next to the column element for which you created a filter.

**Note:** To remove a filter, click the column element for which you created the filter, and click **Remove Filter**.

---

## Drilling Through to Detailed Data

IBM Cognos TM1 Application Web provides drill-through capabilities that let you click on a cell in the grid and drill-through to detailed data, which provides additional information or context for the cell.

The detailed data is usually an extract from a relational database or a cube view.

When you create a slice from a view, any drill-through options available in the source view are also available in the slice.

## Procedure

1. Right-click the cell for which you want to view detailed data.
2. Click **Drill**.

If the cell is associated with a single source of detailed data, the data opens in a new window.

If the cell is associated with two or more sources of detailed data, a list of the data sources is displayed. Select the source you want to view and click **OK**.

When the detailed data resides in a cube, a new instance of the cube viewer opens, displaying the detailed data.

---


## Using Sandboxes

Sandboxes allow you to work with your data in different versions, allowing you to add or modify it to see the results in your budget. Changes that you make in a sandbox are not made public until you commit, you can continue to work with your data until you are satisfied with the result.

When you submit a sandbox, that sandbox becomes the default. Your administrator may have disabled sandboxes for your application.

You can have multiple sandboxes to work with different scenarios and view different data results. If you are working with multiple sandboxes, you must submit from IBM Cognos TM1 Application Web, you can not submit from the Cognos TM1 Workflow page.

### Procedure

1. Create a new sandbox by clicking the down arrow next to the sandbox button, and clicking **Create Sandbox**.
2. Click **Create new** to make a new sandbox or **Copy from existing sandbox** to use a sandbox that you have already created as the basis for a new sandbox. Type a name and click **OK**.
3. Select the sandbox that you want to use from the drop-down menu.  
To submit a sandbox, select the sandbox from the drop-down menu, and click the submit button  from the toolbar.
4. To delete a sandbox, click the down arrow next to the sandbox button, and click **Delete Sandbox**.

---

## Using Cognos TM1 Application Web and other interfaces in a single Application

IBM Cognos TM1 Applications stores a user's data entry in a designated area of their Personal Workspace until it is either committed to the base model or reset (cleared).

When using other TM1 interfaces while in Personal Workspace Writeback Mode, data entry is stored in a designated area of the user's Personal Workspace until it is committed to the base model or reset. Uncommitted data in any interface can present problems for users expecting a consistent view of data across Cognos TM1 Application Web and other Cognos TM1 interfaces.

When using TM1 Application Web and another TM1 interface (Microsoft Excel, Cube Viewer, TM1 Web) on a single TM1 Application the following rules apply:

Writeback mode	Interface	Committed data	Uncommitted data (displays in blue)
Personal Workspace	Cognos TM1 Application Web <b>Note:</b> Cognos TM1 Application Web-created sandboxes display in the sandbox list as [ <i>&lt;sandbox name&gt;_&lt;approval hierarchy dimension name&gt;.&lt;approval hierarchy selected element parent name^selected element name&gt;_&lt;Application Web application&gt;</i> ]	Data entry made here can be viewed in all TM1 interfaces. <b>Note:</b> Cognos TM1 Application Web-created sandboxes display in the sandbox list as [ <i>&lt;sandbox name&gt;_&lt;approval hierarchy dimension name&gt;.&lt;approval hierarchy selected element parent name^selected element name&gt;_&lt;Application Web application&gt;</i> ]	Data entry made in Cognos TM1 Application Web can be viewed in other interfaces if you have been assigned Sandbox Capability. See note below. <b>Note:</b> Cognos TM1 Application Web-created sandboxes display in the sandbox list as [ <i>&lt;sandbox name&gt;_&lt;approval hierarchy dimension name&gt;.&lt;approval hierarchy selected element parent name^selected element name&gt;_&lt;Application Web application&gt;</i> ]
	Other Cognos TM1 Interfaces <b>Note:</b> Cognos TM1 Application Web-created sandboxes display in the sandbox list as [ <i>&lt;sandbox name&gt;_&lt;approval hierarchy dimension name&gt;.&lt;approval hierarchy selected element parent name^selected element name&gt;_&lt;Application Web application&gt;</i> ]	Data entry made here can be viewed in all Cognos TM1 interfaces. <b>Note:</b> Cognos TM1 Application Web-created sandboxes display in the sandbox list as [ <i>&lt;sandbox name&gt;_&lt;approval hierarchy dimension name&gt;.&lt;approval hierarchy selected element parent name^selected element name&gt;_&lt;Application Web application&gt;</i> ]	Data entry cannot be viewed by Cognos TM1 Application Web.
Direct	Cognos TM1 Application Web <b>Note:</b> Cognos TM1 Application Web-created sandboxes display in the sandbox list as [ <i>&lt;sandbox name&gt;_&lt;approval hierarchy dimension name&gt;.&lt;approval hierarchy selected element parent name^selected element name&gt;_&lt;Application Web application&gt;</i> ]	Direct writeback mode is not available in Cognos TM1 Application Web.	Direct writeback mode is not available in Cognos TM1 Application Web.

Writeback mode	Interface	Committed data	Uncommitted data (displays in blue)
	Other Cognos TM1 Interfaces	All data entry can be viewed in other interfaces.	All data entry can be viewed in other interfaces.



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## Chapter 3. Managing Changes to the Grid

You have the flexibility to arrange the grid and data organization to suit your needs. You can work with many tabs at one time, or freeze columns or rows for easier scrolling in a particular tab.

You can also modify tab placement, data sorting, and zero suppression. The next time you open any node in the same application, your settings are retained.

---

### Working with Tabs

You can move and reorder tabs.

If you have more tabs than can fit in the window, the hidden tabs appear in the hidden tab control area. This area is indicated by a chevron **»**, and also displays the number of hidden tabs. When you click on the chevron you can select a tab to view.

If you have multiple tabs torn off that have the same context dimensions, you can only view shared members of that dimension. Unique members of the context dimensions cannot be shown until the tabs are returned.

### Try It Yourself - Tear Off a Tab

You want to see the impact of a planned business trip on the overall corporate expenses.

To accomplish this, you will have to tear off the Corporate Expenses tab, also known as the reporting cube, to see the Travel Cost and Corporate Expenses tabs together.

#### Procedure

1. Drag the **Corporate Expenses** tab until you see the drop area highlighted and an arrow indicating the placement of the tab.  
Now the tabs are displayed vertically.
2. Click on the **Travel Cost** tab to make it active.
3. Add data and press Enter to commit data in the **Travel Cost** tab. You will see the data updated in the **Corporate Expenses** tab.
4. To replace the torn tab, drag the tab the other tab area. The source tab returns to the tab area. You can also revert the view by selecting **Reset Tabs** from the **Reset** menu on the toolbar.

---

### Stacking Dimensions

You can stack and reorganize views to change how they are displayed.

You can reset the grid by clicking the down arrow next to the **Reset** button and clicking **Reset View**. To reset data back to the previous save, click **Reset Data**. You can drag and drop views from the dimension bar into other areas of the dimension bar or onto the grid, and organize them on the rows or columns to create the

desired grid layout. Note that a view persists in memory only as long as the browser view from which it originates remains unchanged. If the browser cache is emptied, the view does not persist.

## Try It Yourself - Stack a Dimension

You want to see the differences in budget versions for the cost of supplies and compare the budgets to costs for prior years. You will do this by stacking the versions dimension with the supply cost dimension on the rows.

### Procedure

1. On the **Supply Costs** tab, click and drag the **5 Versions** dimension from the context section of the dimension bar to the row axis. When you see the row axis become outlined to indicate the drop zone, release the mouse button and the dimension is stacked on the rows.

You can now see each supply type with the forecasts for budget version 1 and 2, and the actuals for the prior 2 years.


2. You can move dimensions on the rows or columns back to the dimension bar by selecting the dimension on the grab handle and dragging it onto the bar.

---

## Replacing Dimensions

You can replace dimensions on an axis by dragging and dropping an alternate dimension on top of another dimension.

For example, you can drag a dimension from the column by clicking the grab handle of the dimension and moving it on top of a dimension on the row. When you see the replace drop zone, release the dimension.

**Tip:** You can swap  the rows and columns to view your data differently. For example, if the months are on the rows, and marketing campaigns on the columns, you can swap the rows and columns to make it easier to view campaign costs over time.

## Try It Yourself - Replace Dimensions

You would like to see the individual types of marketing for each campaign. To do this, you can swap the Marketing dimension with the Campaigns dimension on the rows.

### Procedure

1. On the **Marketing** tab, select the grab handle of the **Campaign 1** dimension from the context.
2. Drag the dimension on top of the **1 Marketing** dimension on the rows. When you see the rows outlined, release the **Campaign 1** dimension. The source dimension now replaces the target dimension in the rows.

---

## Editing Subsets

The Subset Editor tool lets you define a subset for any dimension to limit the number of elements used in a row.




A dimension can have thousands of elements. It is unlikely, however, that any view will require all elements from all dimensions. In most cases, you should limit the elements used in a view to those that are required for a specific analysis of your data.

For best results, limit the number of elements that appear as title elements. That way, if you view the data over slower Internet connections, your data displays more efficiently.

## Procedure



Click the down arrow next to a dimension on the row or column. The subset editor opens.

To open the subset editor for a context dimension, click the down arrow on the dimension and click the subset editor button .

## Editing with the Subset Editor

To perform editing tasks on a subset, use the Subset Editor.

### Procedure

1. Click **Open Subset**  next to any dimension.  
The Subset opens.
2. Click **Open Subset Editor**  at the bottom of the Subset.

### Results





The Subset Editor contains two panes.










- **Available Elements** (left pane) - Displays all the elements that are available to be added to your subset.
- **Subset** (right pane) - Displays only the actual members of the subset. When you save a subset, only the elements in the Subset pane are saved to the subset.



## Using the Subset Editor Toolbar

The editing tasks available in the Subset Editor are accessed from its toolbar buttons.

The following table describes the Subset Editor toolbar buttons:

Button	Name	Description
	Save Subset	Saves only the elements that appear in the Subset list to the subset.
	Save Subset As	Saves only the elements that appear in the Subset list to the subset with a different name.
	Reload Subset	Reloads the original subset.
	Subset All	Displays all the elements in the parent dimension.

Button	Name	Description
	Cut, Copy and Paste	Cuts, copies, and pastes the selected elements of a subset.
	Keep Selected Elements	Keeps elements that you select for the subset.
	Delete Selected Elements	Removes elements that you select from the subset.
	Filter Subset	Allows you to select a group of elements in a subset that have related characteristics. You can filter elements in these ways: <ul style="list-style-type: none"> <li>• Filter by Level</li> <li>• Filter by Attribute</li> <li>• Filter by Expression</li> </ul>
	Sort Subset	Lets you sort a subset in several ways: <ul style="list-style-type: none"> <li>• Sort Ascending</li> <li>• Sort Descending</li> <li>• Sort Hierarchically</li> <li>• Sort by Index Ascending</li> <li>• Sort by Index Descending</li> </ul>
	Tree Expand	Expands the tree in several ways: <ul style="list-style-type: none"> <li>• Drill Down Selected Consolidations - Expands the selected consolidation one level.</li> <li>• Expand Selected Consolidations - Expands the selected consolidation, showing all descendents.</li> <li>• Expand Tree Fully - Expands the entire hierarchy, showing all children of all parents.</li> </ul>
	Tree Collapse	Collapses the tree in two ways: <ul style="list-style-type: none"> <li>• Collapse Selected Consolidations - Collapses the expanded consolidation, hiding all descendents.</li> <li>• Collapse Tree Fully - Collapses the entire hierarchy.</li> </ul>
	Insert Parents of Selected Elements	Inserts the parent of the selected element immediately above that element in the hierarchy tree.
	Expand Above	Displays consolidations at the bottom of the list of children, in both the Available Elements and Subset lists. The children of the consolidation expand above the consolidation.

Button	Name	Description
	Create Custom Consolidation	Allows you to build consolidated elements on the fly when working with a view.  For details, see “Creating Custom Consolidations” on page 40.
	Find in Subset	Enables you to search for elements in the current subset based on the search text you enter.

## Displaying translated element names in the cube viewer

Once your model has been translated, as described in “Translating your model” in the IBM Cognos TM1 Developer Guide, you can display translated element names in the cube viewer.

### Before you begin

Ensure that the language in which you want to view element names is set as the display language for your browser.

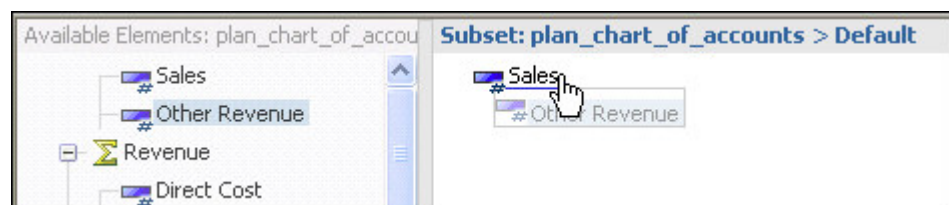
### Procedure

1. In the cube viewer, click the dimension for which you want to display translated element names. The current subset of the dimension opens in the Subset Editor.
2. In the Subset Editor, select **Caption** from the **Alias** list.
3. Click **OK**.
4. Close and reopen the view, saving any changes if prompted. The elements display in the language used by your web browser.

## Moving Elements

You can move elements from the Available Elements pane to the Subset pane using a drag-and-drop operation.

In this example, if you click Other Revenue in the Available Elements pane, you could drag the element to beneath Sales in the Subset pane.



The line beneath the Sales element indicates that the Other Revenue element will appear beneath Sales.

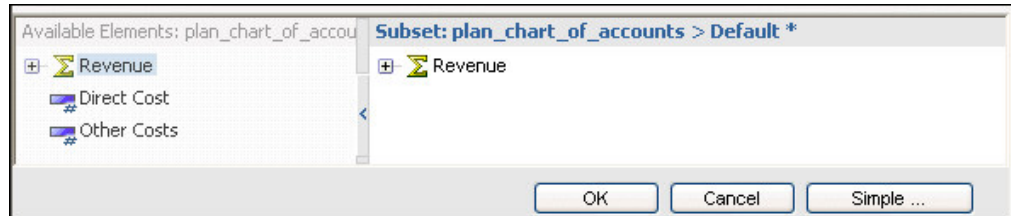
## Moving Consolidations

You can move a consolidation from the Available Elements pane to the Subset pane using a drag-and-drop operation.

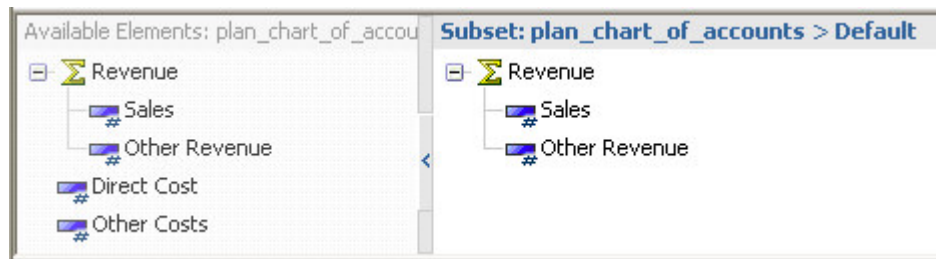
When you move a consolidated element, the children of the consolidation also move.

For this example, suppose you have a consolidation element named Revenue.

If you select Revenue, and drag it to the Subset pane, a collapsed consolidation is added to the Subset pane.



If you expand Revenue in the Available Elements pane, and select the consolidation and its children, you can drag the consolidation to the Subset pane. The expanded consolidation is added to the Subset pane.



In both of the examples, the Revenue consolidation and its children are added to the Subset list. However, the state of the consolidation in the Subset list reflects the way the consolidation displays. In the first example, Revenue displays as a collapsed consolidation. In the second example, Revenue displays as an expanded consolidation and its children will be visible.



## Keeping Elements

You can reduce the list of elements in the Subset pane to only those elements you want to keep in your subset.

In this case all other elements are removed from the subset.

**Note:** You can reduce the size of the Available Elements list to narrow your search for elements to add to your subset, but this has no effect on the elements in the Subset list.


## Procedure

1. Select the elements that you want to keep in the Subset list.
2. Click **Keep Selected Element(s)**  .  
Only the elements that you selected to keep remain visible in the Subset list.
3. Click **Save Subset**  to save the subset.

## Deleting Elements


You can remove selected elements from the Subset pane.

### Procedure

1. Select one or more elements in the Subset pane.
2. Click **Delete Selected Element(s)** .

### Results

The selected elements are removed from the Subset pane. The removed elements still exist in the dimension.

**Note:** To display all subset elements that you removed, click **Subset All** .

## Filtering Elements

You can filter elements in either the Available Elements pane or Subset pane.


Use these options:

- **Filter by Attribute** - Displays only the elements that match an attribute that you specify.
- **Filter by Level** - Displays only the elements that match a level in the element hierarchy.
- **Filter by Expression** - Displays only the elements that match a pattern.

### Filtering by Attribute:

The Subset Editor lets you filter elements by attribute value.

### Procedure

1. Click **Filter Subset**,  and click **Filter by Attribute**.
2. In the **Select Attribute** list, select an attribute.
3. In the **Select value to match** list, select a value.
4. Click **OK**.

### Results

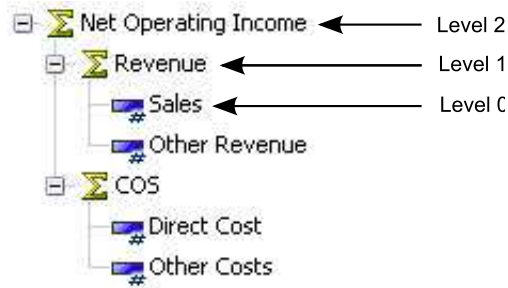
All subset elements whose selected attribute matches this value remain in the element list. All subset elements whose selected attribute does not match the value are removed from the element list.

### Filtering by Level:


The Subset Editor lets you filter elements so that only elements belonging to one or more specified hierarchy levels remain.

Consider the following example of a three-level hierarchy.

In this example, you start with the subset shown in the figure, and then eliminate all elements from the subset except those at Level 1.



### Procedure

1. Click **Filter Subset** , and click **Filter by Level**.
2. Click a level in the list, and click **OK**.

For example, if you filtered by **Level 1**, the following level 1 subset elements remain in the Subset list:

- Revenue
- COS

### Filtering by Expression:


The Subset Editor lets you filter elements so that only elements matching a specified search pattern remain.

For example, suppose you have the following list of elements in either the Available Elements pane or Subset pane.

- Sales
- Other Revenue
- Direct Cost
- Other Costs
- Bank Charges
- Board of Directors
- Employee Relations
- Printing
- Seminars and Continuing Ed.
- Taxes and Licenses
- Office Expense
- Postage
- Rent

Now suppose you want to reduce this list to those elements that contain the word 'cost'.

### Procedure

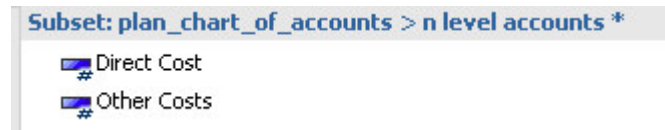
1. Click **Filter Subset** , and click **Filter by Wildcard**.
2. Enter a pattern of alphanumeric characters in the **Enter Expression** box.  
You can use the following two wildcard characters in the **Enter Expression** box.
  - **Question mark (?)** - Placeholder for a single character
  - **Asterisk (\*)** - Placeholder for one or more characters

To isolate all elements whose names contain the string pattern *cost*, type the expression 'cost' in the dialog box that opens.

3. Click **OK**.

## Results

The element list is trimmed to include only those elements that match the pattern.



## Finding Elements


You can search for elements in either the Available Elements pane or Subset pane by using the Find in Subset toolbar.

This feature performs a simple text search for elements that match a spelling pattern that you enter. This is especially useful when you want to find a specific element within a large list of elements.


**Note:** The Find in Subset feature does not support wildcard characters, such as the question mark (?) or asterisk (\*), in your search text. Instead, an asterisk (\*) wildcard character is inserted at the beginning and end of the spelling pattern that you enter so that it searches for any occurrence of the pattern in the element list.

For example, if you enter the spelling pattern *ost*, this converts to *\*ost\** and matches such as *Cost* and *Boston* are found.

## Procedure

1. Click **Find in Subset**  or press **CTRL+F**.  
The Find in Subset toolbar opens in the Subset Editor.
2. Type a spelling pattern in the search box.  
A spelling pattern can include one or more alphanumeric characters, but should not include wildcard characters.  
The list of elements is searched as you type a spelling pattern.
  - If one or more matching elements are found, the first matching element is located and highlighted in the list.
  - If a matching element is not found, the search box temporarily displays a red background.

You can also start your search at any location within the element list by clicking on an element in that section of the list. The search begins from this new start point when you continue your search.
3. Click **Find Next** or **Find Previous** to navigate through the element list when more than one matching element is found.  
You can also use the following keyboard commands to navigate:
  - Press **F3** or press **ENTER** to find the next matching element.
  - Press **SHIFT+F3** or press **SHIFT+ENTER** to find the previous element.

If a next or previous matching element is not found, the search box temporarily displays a red background, and the search cycles through the list again.
4. Click **Close the Findbar**  to close the **Find in Subset** toolbar.

## Sorting Elements

You can sort all elements in either the Available Elements pane or Subset pane.

### Procedure

To sort subset elements, click **Sort Subset**  and select a sort option.

Sort Option	Sort Order
Sort Ascending	Ascending order from A to Z, 0-9.
Sort Descending	Descending order from Z to A, 9-0.
Sort Hierarchically	All children appear beneath their parents.
Sort by Index Ascending	Dimension index, starting at 1.
Sort by Index Descending	Dimension index, starting at the highest index in the dimension.

## Expanding and Collapsing Consolidations


You can expand a consolidation in the Subset Editor to display the immediate children or all descendants of the consolidation.

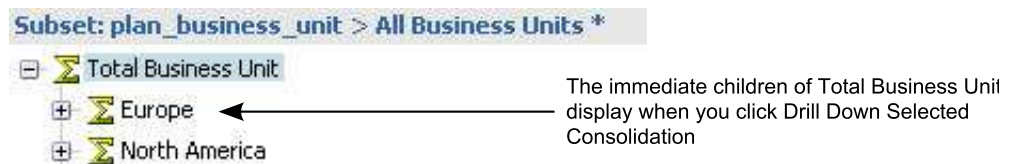
You can apply the following procedures to elements in either the Available Elements pane or the Subset pane of the Subset Editor.

### Expanding a Consolidation:

You can expand a consolidation.

#### Procedure

1. Select the consolidations you want to expand.
2. Click **Tree Expand** .
3. Select one of the following:
  - Click **Drill Down Selected Consolidations** to view the immediate children of a consolidation. The following figure shows the result of drilling down on the Total Business Unit consolidation.



- Click **Expand Selected Consolidations** to view all descendants of a consolidation. The following figure shows the result of expanding the Total Business Unit consolidation.







- Click **Expand Tree Fully** to view all descendents of all parents in the dimension hierarchy.

### Collapsing a Consolidation:

You can collapse expanded consolidations using either a selected consolidation or you can close all expanded consolidations in the subset.

#### Procedure

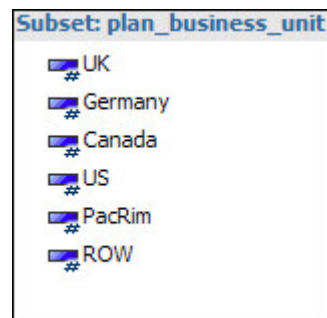
1. Select the expanded consolidations you want to collapse.
2. Click **Tree Collapse** .
3. Click **Collapse Selected Consolidations**.


**Note:** To close all expanded consolidations in the subset, click **Tree Collapse**,  and click **Collapse Tree Fully**.

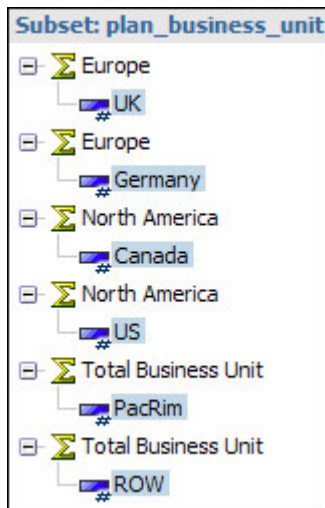
### Inserting Parents

You can insert the immediate parent of a selected element directly above that element in the Subset Editor.

For example, consider the following example showing several leaf elements.



If you select all elements, and click **Insert Parents of Selected Elements** , the immediate parents of all selected elements are inserted, as shown in the following example.



## Creating Custom Consolidations




When working with a view, you can create custom consolidations from existing subsets or from selected subset elements.

### Creating a Custom Consolidation from an Existing Subset

You can create a custom consolidation by inserting an existing subset into the current subset.

The existing subset then becomes a custom consolidation within the current subset.

#### Procedure

1. Open the Subset Editor for a dimension.
2. Define a subset in the **Subset** pane.
3. Click **Create Custom Consolidation**  and click **Create Consolidation from Subset**.
4. Select the existing subset that you want to insert into the current subset as a custom consolidation.  
The selected subset is inserted into the current subset as a custom consolidation.
5. If necessary, click **Save Subset**  or **Save Subset As**  to save the current subset.
6. Click **OK**.

#### Results


The subset with the new custom consolidation opens.

### Creating a Custom Consolidation from Selected Elements

You can create a custom consolidation from selected elements in the Subset Editor.

#### Procedure

1. Open the Subset Editor for a dimension.

2. In the Subset pane, select the elements that you want to include in the custom consolidation.
3. Click **Create Custom Consolidation**,  and click **Create Consolidation from Selected Elements**.

You have now created a custom consolidation that contains the elements that you selected in step 2.

The custom consolidation the name **JROLLUP\_ #** is assigned, where # starts at zero and increases by one for each custom consolidation that you create during a server session.
4. Click **OK** to view the new custom consolidation.



---

## Chapter 4. Working with Charts

This section illustrates how to view a chart in Cognos TM1 Web.

### Procedure

1. Open a view.
2. Do one of the following to view a chart:
  - Click **View Chart** to view cube data in chart format only.  
A column chart, the default chart type, is displayed.
  - Click **View Chart and Grid** to view cube data in both chart and grid format.  
A grid is displayed at the top, and a column chart, the default chart type, is displayed at the bottom.
  - Click **View Grid** to view cube data in grid format only.

---

### Changing the Chart Type

You can change the chart type from the Chart Properties menu.

Follow the steps below to change the chart type.

### Procedure

1. On the toolbar, click **Chart Properties > Chart Type**.
2. Select one of the available chart types, such as **Point**, **Line**, **Column**, or **Pie**.

---

### Drilling from a Chart

If your administrator has defined drill-through processes and rules for cube cells represented in a chart, you can drill through to associated data from the chart.

For details on creating drill-through processes and rules, see the *IBM Cognos TM1 Developer Guide*.

If a chart component is associated with a single source of associated data, the data immediately opens on a new View tab. If the chart component is associated with a multiple sources of associated data, you are prompted to select a single source.

For example, this section illustrates how to execute a drill.

### Procedure

1. Click **View Chart** to display the chart.
2. Right-click a column in the chart and click **Drill Through**.  
If the cell is linked with two or more sources of associated data, the Drill dialog box opens, listing the data sources associated with the chart component.
3. Select the source you want to view and click **Select**.

### Results

The selected data opens on a new **View** tab.




---

## Chapter 5. Exporting Data

You can export data to Microsoft Excel to create reports and charts, and to manipulate data. You can also export data into a text file.

**Note:** If you export using either **Slice to Excel** or **Snapshot to Excel** and Microsoft Excel is not on the server, any charts present in the grid are not exported to the resulting worksheet. If you use **Export to PDF** your chart will show first, followed by your values.

### Procedure

1. Click **Export** .
2. Select an export format for the report:
  - **Slice to Excel** - Excel documents that retain a link to the server through TM1 functions. When you open the slice and connect to the server with which the slice is associated, the slice displays the current cube values, provided you are running Excel with the Perspectives add-in enabled.
  - **Snapshot to Excel** - Excel documents that contain numeric values reflecting the cube values at the moment the export occurred. Because snapshots do not retain a link to the server, the values are static, representing a snapshot of cube values at the moment of export.
  - **Export to PDF** - PDF documents that display cube values at the moment the export occurred.

The Export dialog box opens.

3. Select the number of rows to export:
  - **Export rows in current page** - Exports all rows in the current page.
  - **Export rows from beginning to current page** - Exports the first row in the first page through the last row in the current page.
  - **Export all rows in the view** - Exports all rows from all pages.
4. Select the title dimensions that you want to include in the report.
5. Click **OK** to create the report.

The report sheets are generated and prompts you to either open or save the report.

6. Do one of the following:
  - Click **Open** to open the report in a new browser window.
  - Click **Save** to save the report to disk.

**Note:** By default, exporting a slice or snapshot report to Excel displays the report in a web browser window.

For details on configuring your computer to open reports into the full, stand-alone version of Excel, see the Microsoft support web site.

Additionally, if you want to use TM1 functionality with a slice that you export to Excel, you must open the slice in the stand-alone version of Excel and have a local version of Perspectives or Client installed on your computer.

**Note:** If you are experiencing problems exporting Excel or PDF files and you are using a WAN (Wide Area Network) server, you may need to reconfigure the security settings in Internet Explorer. For details, see the IBM Cognos TM1 *Operation Guide*.



---

## Appendix. Managing Cognos TM1 applications in the portal

To be able to work with the deployed IBM Cognos TM1 Performance Modeler application, you must activate the application in the portal.


All applications are visible to administrators in the applications portal. The application must be activated before it can be used. After activation, the application is available for use. The application and properties can also be edited.

---

### Activating an application in a portal

The IBM Cognos TM1 Performance Modeler application must be activated before users can use it from the Applications portal.

#### Procedure

1. Open the portal. The applications are listed in the **Name** column.
2. To activate the application, under the **Actions** column, click the **Activate Application** icon .


---

### Exporting an application from the portal

You can export an IBM Cognos TM1 Performance Modeler application for use as a template for a new application, or as a backup for an existing application.

An application should be exported only to a server that does not have that application or uses a different dimension for the approval hierarchy of the exported application. An archive is created and contains the XML files that describe the structure and security of your application.

#### Procedure


1. Open the Cognos Applications portal.
2. Click the **Export Application** icon  under the **Actions** column.
3. Click **Save File** to download the file to your computer.

---

### Importing an exported application to the portal

You can import an exported application back into the IBM Cognos TM1 Applications portal and use it as the basis for a new application.

#### Procedure

1. Open the Cognos TM1 Applications portal.
2. Click the **Import Application**  icon.
3. Select the server onto which you want to import the application.
4. Click **Choose file**.
5. Navigate to the application (.zip) file, and then click **Open**.
6. If you want to import security settings with the application, select the **Import application security** option.
7. If you want to import commentary with the application, select the **Restore application commentary** option.

8. Click **Import**.


---

## Resetting an application in the portal

You can reset all nodes in the approval hierarchy to their original state after the application is deployed to the IBM Cognos TM1 Applications portal.

Resetting an application discards all progress made in the planning process so that you can restart the planning process. It also removes sandboxes. Resetting an application does not reset or discard any data changes.

### Procedure


1. Open the Applications portal.
2. Next to your application name, select the check box.
3. Click the **Reset Application**  button.
4. Click **OK** to confirm the reset.

---

## Setting workflow, translation, and text properties in the Applications Portal

You can set properties in the IBM Cognos TM1 Applications Portal.

### Procedure

1. Open the Applications portal.
2. To open the **Set Properties** window, click the **Set Properties**  button
3. Set properties as described here:

#### Workflow Settings: Workflow page refresh rate

The interval, in minutes, at which the workflow page is refreshed.

#### Application Text: Language

The language in which your application runs.

Select any of the available languages from the menu.

#### Application Text: Name

The name of your application. This is the name that identifies the application in the Applications portal and other locations.

There is a 200 character limit for application names.

#### Application Text: Help

This property sets the User Instructions text that appears when users access the application through the Applications Portal.

Enter text that will instruct users on using your Application.

#### Views: Name

This property sets the name that is displayed on the View tab in the Applications client.

#### Views Text: Help

This property sets the text that appears when a user clicks the Help button when working with a view in the Applications client.

Enter instructions or information that assists users in entering data in the view.


4. Click **OK**.

---

## Setting Cognos TM1 Applications configuration options

You can configure options that determine which server hosts your applications and which clients can be run against your applications.

### Procedure

1. Click the **Administer Application** icon  on the IBM Cognos TM1 Applications portal.
2. To add a new server that hosts additional applications, click **Add** in the **Server Names** section.
  - a. Specify the name of the Admin Host for the new server.
  - b. Select the server name from the list of available servers. If the **Server Name** list is empty, click the Refresh button.
  - c. Click **OK**.

You can also select **Disabled** to disable this server.

3. To edit or remove a server, select the server, and click **Edit** or **Remove**.
4. To add a new client application, click **Add** in the Clients section.
  - a. Enter a unique **ID** for the client.
  - b. Select a client **Type**. A client can either open in the **Current Window**, open in a **New Window**, or be **Provisioned** to open in a new application.
  - c. Enter the Universal Resource Locator (**URL**) for the new client.
  - d. Select the **Language** to use as the default. The language setting defines which locale strings are used for the client. The client name is visible in the context menu of the workflow page and is translated based on the content locale setting from the user.
  - e. Enter a **Name** for the client.
5. To edit or remove an existing client, select the client from the Clients list and click **Edit** or **Remove**.






---

## Managing jobs in TM1 Applications

You can monitor the deployment, the initial saving of rights, and the import of an application that may be taking a long time in the TM1 Applications portal and have those jobs processed in the background.

This feature also blocks administrators from triggering any of these actions if they are already running for any application built from the same underlying TM1 server. Anyone who attempts to connect to an application while these processes are completing are blocked and the application displays a busy icon. Also other activity icons are not available during this kind of process. The wait time and the maximum number of threads can be configured using the **deployment MaxThreads** and the **deployment MaxWaitTime** parameters in the `pmpsvc_config.xml` file.


## Procedure

1. In the TM1 Applications portal, click the Manage Jobs  icon. The Manage Jobs window is displayed with any jobs that are currently being processed.
2. Click the **Refresh**  icon to ensure that all currently running jobs are shown.
3. To reduce the jobs shown, click the **Filter**  icon. Click the **Define Filter** icon to identify the criteria to use when reducing the display.  
Use the pull-down at each field to identify the kind of job you want to see.
4. Use the plus sign  to add another set of criteria.
5. If a job is currently running, you can select it and use the delete icon  to delete the job.

## Configuring a TurboIntegrator process to execute on a workflow action

You can configure the execution of a TurboIntegrator process from a Cognos TM1 Application Server workflow action.

### Procedure

1. Create the custom TurboIntegrator process that you want to execute. For more information, see “Considerations for creating a TurboIntegrator process that can be executed from a workflow action” on page 51.
2. Determine the error messages to return to the user. In the TM1 Applications portal, click the Administer icon  and click **Maintenance**. You can define a number of Error Codes in the Cognos TM1 Application Portal and associate them with text strings for specific user locales. You can also define an Error condition which stops workflow execution immediately.  
For example, for an Error Code called CheckPrices, CheckPrices is the code used for the parameter pErrorCode in the custom Process. The strings that you see for English and French can be identified by their system locale. To display the correct strings, the Cognos TM1 server must be correctly configured with Caption support, so that the relevant Cultures (en, en-GB, en-US, fr, fr-FR, and so on) are linked to the relevant Captions in the Cognos TM1 server.
3. To set the custom action, open the application in the **Application Design** tab of Cognos TM1 Performance Modeler.
4. Select the application and display the **Properties** tab in the pane.
5. Click the ellipses (...) at the **Custom Processes** label to display the window. You can set the Pre and Post Process names and whether the process is enabled. See the following example:

	Enabled	Pre Process	Enabled	Post Process
Submit	Yes	Other Revenue Validation	No	
Reject	No	Other Revenue Validation	No	

	Enabled	Pre Process	Enabled	Post Process
Annotate	No	Other Revenue Validation	No	

In this example, the Process Other Revenue Validation is configured to run as a Pre-workflow action process in the event of Submit, Reject, or Annotate. However, it is enabled only for the Submit workflow action.

You can configure the same action for Pre- and Post-workflow actions. However, you can configure only one Process to run in each case. For example, you cannot name three Processes to run as Post Process actions for the Submit operation. Only one process is allowed.

The application must be deployed for these settings to take effect.

Test the custom Process execution in a Development environment before deploying to a Production system. If any problems occur with the custom Process execution, use the Enabled flag to selectively isolate the custom Processes to determine whether the workflow actions proceed normally when the custom Process is not running.

6. Click OK.

## Considerations for creating a TurboIntegrator process that can be executed from a workflow action

When you create a TurboIntegrator process that can be executed from a workflow action, there are a number of considerations that must be taken into account.

You can create a TurboIntegrator process in IBM Cognos Performance Modeler. Right-click in the Model Design pane and select **New > Process**.

The Cognos TM1 Application Server needs the context of the workflow action, the approval hierarchy node that is used, and the Application from which the workflow action was performed. The TurboIntegrator process must have the following parameters in this order on the Advanced tab in the process editor.

pExecutionId  
pAppId  
pNodeId  
pWorkflowAction

### pAppId

Represents the GUID unique identifier for the application. The GUID identifies the application that triggered the action. You can deploy more than one application from the same cube, so you need to identify exactly which application triggered the action.

### pNodeId

Represents the node from which the workflow action was performed. pNodeId is always a single value; in the case of a multi-node edit, pNodeId represents the consolidated node from which the action was performed. To return a list of leaf nodes below this consolidated node, you can write your own process logic, or use the tp\_custom\_process\_util\_get\_editable\_leaf\_children\_subset utility process that is provided with the Cognos TM1 Application Server.

### pWorkflowAction

Returns one of the following values:

Table 3. *pWorkflowAction* values.

Value of <i>pWorkflowAction</i>	Description
OWN	Take Ownership of a node.
SAVE	Commit data for a node.
SUBMIT	Submit a node.
REJECT	Reject a node.
ANNOTATE	Annotate a node.
RELEASE	Release ownership of a node.
OFFLINE	Take the approval hierarchy node Offline when the Cognos Insight client is used in Distributed mode.
ONLINE	Return the approval hierarchy node to Online when the Cognos Insight client is used in Distributed mode.

All workflow actions are not available in all application types. For example, the Submit and Reject actions cannot occur in a Responsibility application.

You cannot set a Pre-Workflow TurboIntegrator process for the Commit action.

To return specific messages in the correct locale to the user of the Application, the Process must call a specific system-generated TurboIntegrator process that generates a *ProcessError*; call:

```
vReturnValue = ExecuteProcess('}tp_error_update_error_cube',
    'pGuid', pExecutionId,
    'pProcess', 'tp_pre_action_validation',
    'pErrorCode', 'OtherRevWarning',
    'pErrorDetails', vErrorDetails,
    'pControl', 'Y');
```

```
ProcessError;
```

Update only the *pErrorCode* and *pErrorDetails* fields in this *ExecuteProcess()* statement. Do not edit the other fields.

#### **pProcess**

The name of the current process.

#### **pErrorCode**

A code that represents the error condition that is used to warn the user about (OtherRevWarning in this example). A more descriptive string that can be translated corresponding to this Error Code can be configured in the Cognos TM1 Applications Portal. For more information, see “Configuring a TurboIntegrator process to execute on a workflow action” on page 50 “Configuring a TurboIntegrator process to execute on a workflow action” on page 50.

#### **pErrorDetails**

Can be any string that returns supplementary information that you want returned to the user when the user takes the workflow action. In this case, a variable *vErrorDetails* was used, but a specific text string can also be used. This value cannot be translated. The custom Process must display a *ProcessError*; statement in order for the Cognos TM1 Application Server to present an error or warning to the user. The actions that cause the custom

Process to return a warning or error are also logged in the `ltp_process_errors` cube. This cube is maintained by the Cognos TM1 Application Server and is not edited.

---

## Managing rights for the application

After an IBM Cognos TM1 application is deployed, you must define rights for all user groups for which you want to provide access to the application.

For an application with an approval hierarchy, each node in your approval hierarchy has rights assigned to the user groups that exist on the server that hosts your application. The rights that you assign determine the actions that can be performed by members of the user groups.

For applications without an approval hierarchy, you can assign a group to have full access to the application. Central applications can be designed to either allow users to take ownership or only to edit nodes.

### Assigning rights for an approver

In a typical application, an approver is assigned either **Review** or **Submit** access rights at consolidation nodes in the approval hierarchy. As an application designer, consider the following extra questions:

- Is the approver required to see all levels following the designated consolidation?  
If yes, you can control how many hierarchy levels the user sees by using the **Review Depth** and **View Depth** options in the **Add Rights** window.
- Is the approver required to edit leaf nodes or just submit or reject them?  
If yes, you can allow an approver to edit leaf nodes by enabling the **Allow Reviewer Edit** option in the **Rights** window.

When you assign rights for a consolidated node, those rights are applied to all the descendant nodes of that consolidated node. Descendant nodes include consolidated and leaf nodes under the consolidated node. Cascading rights assignments have the following behavior that depends on which access right you apply to the initial consolidated node:

- **View** rights that are assigned at a consolidated node are also assigned to all descendent nodes.
- **Review** rights assigned at a consolidated node sets **View** rights to consolidation and **Submit** rights to all descendants.
- **Submit** rights assigned at a consolidated node sets **Submit** rights to that consolidation and **Submit** rights to all descendants.

The **Allow Reviewer Edit** option and the **Review Depth** and **View Depth** options in the **Add Rights** window override the cascading of **Review** and **Submit** rights on a consolidated node:

- When the **Allow Reviewer Edit** check box is not selected, the application assigns **View** access rights only where **Submit** or **Edit** rights would exist.
- When you set a number (n) for the **Review Depth** and **View Depth** options, the application only display n-levels from the initial node. You can use these options to keep lower-level nodes from appearing for higher level managers who must focus on higher consolidation levels.

## Assigning rights for a non-approver

To provide a non-approver user or contributor the ability to perform multi-node editing, you must assign at least **View** rights to the consolidated node. This minimum rights assignment makes the consolidated node the starting point from which the user can access, edit, and submit all descendant nodes to which they have the rights. Users must take ownership at the consolidated node to use the Multi-Node Edit ability to gain access to all the related leaf nodes. As an application designer, you must consider the following additional questions:

1. Does the non-approver require the ability to update more than one node at a time with the Multi-Node Edit?

If yes, consider question 2.

If no, you can either assign **Edit** or **Submit** rights to individual leaf nodes for the non-approver.

2. Does the non-approving user need **Submit** rights to all nodes reporting to a parent consolidated node?

If yes, consider question 3.

If no, assign **Submit** rights to the designated child nodes.

**Note:** When you assign **Submit** rights to a leaf node, the underlying TM1 security cube also allows Write access to the consolidated parent of the leaf node. This ensures that values can be spread from the consolidated parent to the leaf nodes for which the user has **Submit** rights.

3. Is the non-approving user responsible for submitting the consolidated node?

If yes, assign **Submit** rights to the non-approver at the consolidation node.

If no, consider question 4.

4. Is another user responsible for submitting the consolidated node?

If yes, assign **Review** rights to the non-approver at the consolidation node.

## The interaction rights and access control in TM1 Applications

The TM1 Application Server enforces various business rules that determine whether or not a user is permitted to view or edit data. These rules determine the Rights set on the Application; whether or not a given user has Ownership of the node or Application; and whether or not a node has been Submitted.

There are three basic "layers" of control that are used by the TM1 Application Server for restricting the data or cubes that a specific user can access: TM1 Security, Data Reservation, and the TM1 Application Server Overlay.

### TM1 Security

The most fundamental layer.

### Data Reservation

Controls who can write to a particular range of cells but applies only to specific users (not Groups) and is used to enforce the Ownership concept. See Using Data Reservations for details on using Data Reservations.

### Security Overlay

This layer also controls who can write to a particular range of cells.

Security Overlay, however, applies to *all* users in the TM1 server, not just the users with rights to the TM1 Application. The Security Overlay is used to enforce the Submission concept to lock data.



**Remember:** Data Reservation or Security Overlay can never grant more permissive rights than TM1 security permits: they can only further constrain a user's access.

The following table describes some right enforcement scenarios.

*Table 4. Techniques used to enforce TM1 Application Server workflow logic*

Concept	TM1 Server	Explanation
Rights	Element and/or Cell Security	When the administrator sets Rights for an Approval or Responsibility Application along the Approval Hierarchy and Control Dimension, these Rights are translated into either Element or Cell Security. Element or Cell Security is determined by the Application's configuration.
Ownership	Data Reservation	<p>When a cube is used in an Approval or Responsibility application, the <b>REQUIREDSHARED</b> mode of Data Reservation is applied to the cube. This mode of Data Reservation requires that a user must have a Data Reservation before they can write to the cube. The TM1 Application Server grants a Data Reservation to a user who takes Ownership of an Approval Hierarchy node or set of Nodes. A Data Reservation is specific to a particular User, not a Group. Only one user can have Ownership of a leaf node at any time. The Data Reservation granted by the TM1 Application Server is scoped to the relevant Approval Hierarchy nodes. If a Control Dimension is used, the Data Reservation is scoped to the writeable Control Dimension slices for the Application.</p> <p><b>Remember:</b> The Data Reservation method is set by the TM1 Application Server with an entry in the <b>JCubeProperties</b> control cube that applies to the whole cube. Because the Data Reservation mode applies to the entire cube, even if a TM1 Application is scoped to only one slice of a cube with the Control Dimension, a Data Reservation is required in order to write to <i>any</i> region of the cube.</p> <p>For Central applications, the <b>ALLOWED</b> mode of Data Reservation is used. This mode permits you to <i>optionally</i> take Ownership if you want to have exclusive write access to all the cells in the scope of the Application. Users in a Central application are able to write by default without taking Ownership subject to normal TM1 security.</p>
Submit	Security Overlay	The action of Submitting a node applies only to Approval applications. When a node is submitted, the slice of data that is identified by the Approval Hierarchy node and Control Dimension, if used, is locked, preventing any further data entry. This locking is done with a Security Overlay cube.

	DEMANDLOAD	MEASURES_DIMENSION	LOGGING	DATA RESERVATION MODE
FruitVegTest				ALLOWED
Large App			YES	REQUIRED SHARED
Large App 2			YES	REQUIRED SHARED
Large App 3			YES	REQUIRED SHARED
Large App 4			YES	REQUIRED SHARED
plan_BudgetPlan	NO	plan_time	YES	REQUIRED SHARED
plan_BudgetPlanLineItem	NO	plan_time	YES	
plan_Control	NO	plan_measure_setting	YES	ALLOWED
plan_ExchangeRate	NO	plan_time	YES	
plan_Report	NO	plan_time	YES	
Small App			YES	REQUIRED SHARED
Small App Copy			YES	
ApplicationSecurity			YES	

## How to enforce security rights in an application

You can set the method that is used to determine how rights to a cube or cell are enforced by an application. The way rights are enforced when an application shares an approval hierarchy has changed.

In earlier versions of TM1, an approval hierarchy could not be shared across an application. Rights to view or edit a particular piece of data were enforced with element security on the approval hierarchy. In TM1 version 10.2, the architecture was changed so that rights are enforced with cell security. This change meant the approval hierarchy dimension could be used in multiple applications. It also enabled multiple applications to be deployed from the same cube.

The **Method to enforce rights** setting in the Application Design tab determines the technique that is used to enforce rights. For more information, see Set application properties in TM1 Performance Modeler.

To share an Approval Hierarchy dimension across TM1 Applications, you need to use cell security to enforce rights. With cell security, a Control Dimension is used to delineate the Applications. When Cell Security is used, the TM1 Application Server creates Cell Security cubes for all data cubes in the Application that contains the Approval Hierarchy dimension. If Cell Security cubes already exist, the TM1 Application Server extends their dimensionality to ensure that they include the Approval Hierarchy dimension and the Control Dimension if a control dimension is used.

When rights are enforced with element security, the element security is populated on the Approval Hierarchy dimension using a TurboIntegrator process. In that case, a change to the rights does not generate a Security Refresh.

You cannot use a Control Dimension if Element Security is used to enforce the rights.

You can use the **Enforce Element Security on Approval Hierarchies** parameter to turn Element Security on for approval hierarchies. This parameter is a property of all the Approval or Responsibility Applications for a given TM1 server.

**Remember:** This parameter does not apply to Central applications because Central applications do not have an Approval Hierarchy. TM1 does not enforce any additional TM1 security for Central applications.

**Enforce Element Security on Approval Hierarchies** defaults to **No** for both new and upgraded environments. You set this parameter in the Properties pane of the Applications folder.

To be sure that any user in any non-TM1 Application interface, for example TM1 Web, Architect, or Cognos Business Intelligence (BI), sees only approval hierarchy dimension elements for which they have access, set this parameter to **Yes**. Remember that the user can have access to more than one Application. The **Yes** setting applies Element security to any dimension used as an approval hierarchy.

In earlier releases, 10.2 GA and 10.2 FP1, element security was not applied to the approval hierarchy dimension. In that case, if you use Architect, for example, you can see all the *elements* of the Approval Hierarchy in the subset editor, even though you can see the data for only the elements for which you have rights in the TM1 Application.

If rights are enforced using Cell security, then Element Security is applied to the Approval Hierarchy dimension only if the **Enforce Element Security on Approval Hierarchies** option is set to Yes. When **Enforce Element Security on Approval Hierarchies** is yes, element security is applied using a rule that refers to a control cube maintained by the TM1 Application Server. This cube contains logic that computes the aggregate security across all Groups and all Applications that use the same Approval Hierarchy dimension. In this case, because Element Security is driven using Rules, the TM1 Application Server must do a Security Refresh when the Rights are updated. This Security Refresh can take some time for a large TM1 Server. If this time is prohibitive, you can revert to using Element Security to enforce Rights, or switch the **Enforce Element Security on Approval Hierarchies** option to No using a Control Dimension is not possible if Element Security is used to enforce the rights.

When Cell Security is used as the **Method to enforce Rights**, then you can additionally set a parameter added in TM1 version 10.2.2 called **CELLSECURITYMOSTRESTRICTIVE** in the **!CubeSecurityProperties** cube, for the data cubes in the scope of the Application.

When **CELLSECURITYMOSTRESTRICTIVE** is **yes**, Element and Cell Security behave such that the most restrictive applies. For instance, if Element Security for a specific element is set to READ for a given Group and Cell Security for a cell referencing that dimension element is set to WRITE, then security will resolve to READ. If the **CELLSECURITYMOSTRESTRICTIVE** parameter is set to any value other than YES, then the server behaves as it did in the prior releases.

Choosing how to set this parameter depends whether you wish to take advantage of the new behavior when **CELLSECURITYMOSTRESTRICTIVE** is set to **yes**, or whether you wish to maintain the existing TM1 Server behavior. If you have existing TM1 Applications built using TM1 10.1.1 or earlier that use Cell Security, you are likely to want to retain the old behavior, so the **CELLSECURITYMOSTRESTRICTIVE** parameter need not be altered. If you are building new Applications in TM1 10.2.2, you wish to use the ability to share Approval Hierarchy dimensions, and you want to make use of READ-level Element Security on some dimensions, then you can set **CELLSECURITYMOSTRESTRICTIVE** to **yes** to have your Element Security respected.

If you already have Applications deployed in TM1 10.2, you may have used the techniques described in the IBM Technote 'Element Security and TM1 Applications in TM1 10.2' <http://www-01.ibm.com/support/docview.wss?uid=swg21659499>.

The use of the **CELLSECURITYMOSTRESTRICTIVE** parameter will allow you to model some of the scenarios described in that Technote more easily.

The TM1 Application Server does not access **CELLSECURITYMOSTRESTRICTIVE** and it is blank by default. This behavior means that in the TM1 Server, Cell Security set to WRITE overrides READ-level Element Security, which is the behavior used in earlier releases. If you wish to enforce rights using Cell Security, for example, to share Approval Hierarchies, and you also wish to use Element Security set to READ, then set this parameter to YES for the relevant cubes.

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# Index

## A

- activate 2
- Add command 18
- adding data 11
  - copy commands 17
- allow multi node views 48
- annotations 8
- application
  - help 48
  - language 48
  - name 48
- Application Web and other interfaces 25
- applications
  - portal 47, 48
  - rights 53
  - setting configuration options 49
- attachments 8

## B

- basic layout 12
- bouncing 6
- buttons 13

## C

- charts
  - drill through 43
- collapsing consolidations 39
- commands 13
- commentary 8
- consolidations
  - collapsing in a subset 39
  - expand 38
  - moving in a subset 34
- contributions 3
- copy commands 17
- Cube Viewer
  - chart drill through 43
  - filtering 23
  - navigation 16
  - paging toolbar 16
  - toolbar 13
- custom consolidations
  - from existing subsets 40
  - from selected elements 40

## D

- data
  - detailed 24
  - editing 5, 17
  - export 45
  - rejecting 5
  - replacing 17
  - reviewing 5
  - submitting 5
  - submitting for review 5
  - viewing 11

- data entry commands 18, 19
- data spreading
  - excluding 22
- Decrease command 18
- deleting
  - elements 35
- dimension
  - example 30
  - replace 30
  - stacking 29
- Disable/Enable server 49
- Divide command 18
- drill through 24
  - detailed data 24

## E

- editing
  - data 5, 17
  - subsets 31
- elements
  - deleting 35
  - filtering 35
  - inserting parents 39
  - keeping 34
  - reducing in a subset 34
  - sorting 38
- entering data
  - data entry commands 18, 19
- Error Code 50
- example 29, 30
- expand
  - consolidations 38
- export data 45
- exporting 47

## F

- filtering
  - by attribute 35
  - by expression 36
  - by level 36
  - data in Cube Viewer 23
  - elements 35
  - types 23

## G

- getting started 1
- grid
  - changes 29
- Grow commands 18

## H

- Hold command 18

## I

- importing 47
- incomplete 3
- Increase command 18
- inserting
  - parents 39

## K

- K command 18
- keeping elements 34

## L

- language
  - application 48
- layout 2
  - basic 12
  - view 29
- layouts
  - nested 12
- locked 3
- logon 2

## M

- M command 18
- manage long running jobs 50
- managing changes 29
- Microsoft Excel 45
- modifying views 11
- Multiply command 18

## N

- navigation
  - Cube Viewer 16
- nested layout 12
- not started 3

## O

- open 2
- options
  - regional 2
- overview 1
- ownership 6, 11

## P

- Pagination 16
- paging toolbar 16
- Percent command 18
- portal 47
- portal properties 48
- Power command 18
- preferences 2
- purging commentary 8

## Q

- quick commands
  - copy commands 17

- quick commands (*continued*)

- data entry commands 18, 19

## R

- ready 3
- red triangle on a cell 8
- reject 3
- rejecting
  - data 5
- Release 11
- release ownership 6
- replacing data 17
- replacing dimensions 30
- rights for applications 53

## S

- sample 29, 30
- sample application 1, 2
- sandbox 25
  - creating 25
  - deleting 25
- sandboxing 25
- shortcuts 13, 19
- sorting elements 38
- spreading data
  - excluding cells in a Cube View 22
  - excluding consolidations in a Cube View 22
- stacking dimensions 29
- submitting
  - data 5
  - data for review 5
- Subset Editor
  - collapse consolidations 39
  - collapse tree fully 39
  - displaying 31
  - drill-down consolidations 38
  - expand consolidations 38
  - expand tree fully 38
  - toolbar 31
- subsets 31
  - collapsing consolidations 39
  - deleting subsets 35
  - editing 31
  - expanding consolidations 38
  - filtering elements 35
  - inserting parents 39
  - keeping elements 34
  - moving consolidations 34
  - moving elements 33
  - sorting elements 38
- Subtract command 18

## T

- table
  - workflow screen 3
- tabs
  - example 29
  - tear off 29
- take ownership 11
- template 47
- TM1 Applications 1
- toolbar 13

- toolbars
  - Cube Viewer 13
  - paging 16
  - Subset Editor 31
- tree
  - workflow screen 3
- TurboIntegrator process in workflow 50

## U

- user-defined consolidations
  - See custom consolidations 40

## V

- view
  - changes 29
  - dimensions 29, 30
  - help 48
  - layout 2
  - name 48
  - tabs 29

- viewing
  - data 11
- viewing data
  - modifying views 11
- views
  - modifying 11

## W

- Web charts
  - chart type 43
  - drill through 43
- work in progress 3
- workflow 2
- workflow page refresh rate 48
- workflow screen 3
  - contributions 3
  - reviews 3
  - table 3
  - tree 3