



Handling Sets - Under the Hood of Calculated Members

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**Engineering
customer requests
and compliance**



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What is set and
why to use the
set?

Creating sets in
MDX

Use cases

DEFINITION OF SET

A set is a well-defined collection of distinct objects. The objects that make up a set can be anything.

`{4, 2, 1, 3}`

`{blue, white, red}`

`{1, 2, 3, ..., 1000}`

`{ $n^2 - 4$: n is an integer, and $0 \leq n \leq 19$ }`

DEFINITION OF SET

**A collection of
dimension
members**

▼ Issue

► Select individual members

▼ All hierarchy level members

Select all members at level

Project 4 Issue 595

Sub-task

Project 4 Parent 447

Sub-task 595

Epic

Project 4 Epic 28 Parent 447

Program overview ▼

PO-1 Account managment
PO-2 Accounts overview
PO-3 Account subscription
PO-4 INTRO 78
PO-7 Leary's elusively whoever eloquence Bas
PO-8 Parnassus JFK's clamorous disputing co
PO-9 Dominguez's genital Meyers snuffbox's
PO-10 Cassandra lapetus's caddy's burglarized

```
{[Issue].[Program overview].[PO-1 Account managment],  
[Issue].[Program overview].[PO-2 Accounts overview],  
[Issue].[Program overview].[PO-3 Account subscription],  
[Issue].[Program overview].[PO-4 INTRO 78],  
[Issue].[Program overview].[PO-7 Leary's elusively whoever eloquence Basie's dea  
[Issue].[Program overview].[PO-8 Parnassus JFK's clamorous disputing consorted s  
[Issue].[Program overview].[PO-9 Dominguez's Meyers snuffbox's],  
...  
}
```

Order and Hierarchy

Time

Select individual members

All hierarchy level members

Select all members at level

Year 2

Quarter 4

Month 6

Day 25

Weekly [edit](#)

Year 2

Week 14

Day 25

Add Fiscal hierarchy

Add members for date range

Delete members for date range

Drill into or expand

	Is ch
- All Times	
- 2018	
- Q2 2018	
- May 2018	
May 04 2018	
May 05 2018	
May 06 2018	
May 07 2018	
May 08 2018	
May 09 2018	
May 10 2018	
May 11 2018	

Why to use the set

Aggregate members

Custom measures on
sets

Finding a specific
dimension member

Why to use the set

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Why to use the set

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Custom measures on
sets

**Finding a specific
dimension member**

WHY SETS?

Aggregated members

The screenshot shows a Tableau interface with the following components:

- Pages:** A red box highlights the 'Project' dimension.
- Columns:** A red box highlights the 'Issue Type' dimension. A red arrow points from the 'Project' dimension to the 'Issue Type' dimension.
- Columns Shelf:** A red box highlights the filter 'DEMO Alpha, DEMO Beta'.
- Table:** A table with the following data:

	Issues created
Story	166

WHY SETS?

Aggregated members

The screenshot shows a Tableau dashboard with a pivot table. The 'Pages' shelf contains 'Project'. The 'Columns' shelf contains 'Measures'. The 'Rows' shelf contains 'Issue Type'. The 'Measures' shelf contains 'Issues created'. A red arrow points from the 'Project' dimension to the 'DEMO Alpha, DEMO Beta' filter. The pivot table shows the following data:

	Issues created
Story	166

Define calculated member formula

[Project] . [Demo projects] =

```
1 Aggregate({  
2   [Project].[DEMO Alpha],  
3   [Project].[DEMO Beta]  
4 })
```


WHY SETS?

Aggregated members

Pages

► Project

Rows

► Issue Type

Columns

► Measures

Table Bar Line Pie Scatter

DEMO Alpha, DEMO Beta

	Issues created
Story	166

Define calculated member formula

[Project] . [Demo projects] =

```
1 Aggregate({  
2   [Project].[DEMO Alpha],  
3   [Project].[DEMO Beta]  
4 })
```

Rows

► Issue Type

► Project

Select individual members

All Projects [edit](#)

DEMO projects = [edit](#)

	Issues created
Story	166

WHY SETS?

Aggregated members

The screenshot shows a BI tool interface with the following components:

- Pages:** A box containing a dropdown menu with 'Project' selected. This box is highlighted with a red rectangle.
- Rows:** A box containing a dropdown menu with 'Issue Type' selected.
- Columns:** A box with a 'Measures' dropdown menu.
- Table:** A table with two columns: 'Issues created' and 'Story'. The 'Story' row shows a value of 166.
- Filters:** A dropdown menu showing 'DEMO Alpha, DEMO Beta' is highlighted with a red rectangle. A red arrow points from the 'Project' dropdown in the Pages section to this filter dropdown.

The screenshot shows a BI tool interface with the following components:

- Rows:** A box containing a dropdown menu with 'Issue Type' selected.
- Columns:** A box containing a dropdown menu with 'Project' selected.
- Table:** A table with two columns: 'Issues created' and 'Story'. The 'Story' row shows a value of 166.
- Filters:** A dropdown menu showing 'DEMO Alpha, DEMO Beta' is highlighted with a red rectangle. A red arrow points from the 'Project' dropdown in the Columns section to this filter dropdown.

Define calculated member formula

[Project] . [Demo projects] =

```
1 Aggregate( {  
2   [ Project ] . [ DEMO Alpha ],  
3   [ Project ] . [ DEMO Beta ]  
4 }
```

WHY SETS?

Custom measures on sets

Define calculated member formula

[Measures].[] =

1 Av
Avg(<Set>, <Numeric Expression>)

WHY SETS?

Custom measures on sets

Define calculated member formula

[Measures].[Daily average] =

```
1 Av  
   Avg(<Set>, <Numeric Expression>)
```

[Measures].[Daily average] =

```
1 Avg(  
2   [Time.Weekly].CurrentHierarchyMember.Children,  
3   [Measures].[Issues created]  
4 )
```

WHY SETS?

Custom measures on sets

Define calculated member formula

[Measures].[Daily average] =

```
1 Av  
  Avg(<Set>, <Numeric Expression>)
```

[Measures].[Daily average] =

```
1 Avg(  
2   [Time.Weekly].CurrentHierarchyMember.Children,  
3   [Measures].[Issues created]  
4 )
```

Time

Select individual members

All hierarchy level members

Select all members at level

Year 3 Quarter 8 Month 22

Day 514

Weekly [edit](#)

Year 3 Week 87 Day 514



Hide empty rows ▾

	Issues created	Daily average
- W10, Mar 06 2017	15	3.75
Mar 08 2017	3	
Mar 09 2017	6	
Mar 10 2017	3	
Mar 12 2017	3	
+ W11, Mar 13 2017	13	2.60
+ W12, Mar 20 2017	12	3.00

WHY SETS

Finding the element

[Measures].[Last date issue created] =

```
1  -- annotations.group = 8 Handling sets
2  Order(
3    Filter(
4      [Time].[Day].Members,
5      [Measures].[Issues created]>0
6    ),
7    [Time].CurrentMember.StartDate,
8    BDESC
9  ).Item(0).StartDate
```

Formatting yyyy-mm-dd hh:mi:ss Date and time

Read [calculated members tutorial](#) to learn about calculated member formulas, members, operators and frequently used functions from sidebar to insert

search on formula

WHY SETS

Finding the element

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4     [Time].[Day].Members,
5     [Measures].[Issues created]>0
6   ),
7   [Time].CurrentMember.StartDate,
8   BDESC
9 ).Item(0).StartDate
```

Pages

Drag here if needed

Rows

Nonempty

▼ Reporter

► Select individual members

▼ All hierarchy level members

Select all members at level

User 11

► Drill into or expand

Pages

Columns

► Measures

Table

Bar

Line

Pie

Scatter

Timeline

Map

Gantt

Calendar form



Hide empty rows ▼

Total ▼

Freeze

	Issues created	Last date issue created
Cassy Rock	31	2017-09-02 00:00:00
Constance Moon	28	2017-08-28 00:00:00
David Sand	61	2018-02-17 00:00:00
Duncan Snow	67	2018-02-18 00:00:00
eazyBI Support admin	65	2018-05-03 00:00:00
eazyBI support demo	74	2018-02-17 00:00:00
JDG REST Admin	47	2018-02-09 00:00:00

How to create the set

Enumeration

List all the members of set

Range of members

“:”, Tail, Head, Item, Rank, etc.

Iteration

Iterate over the members and filter by patterns (Members, Descendants, Children)

How to create the set

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How to create the set

Enumeration

List all the members of set

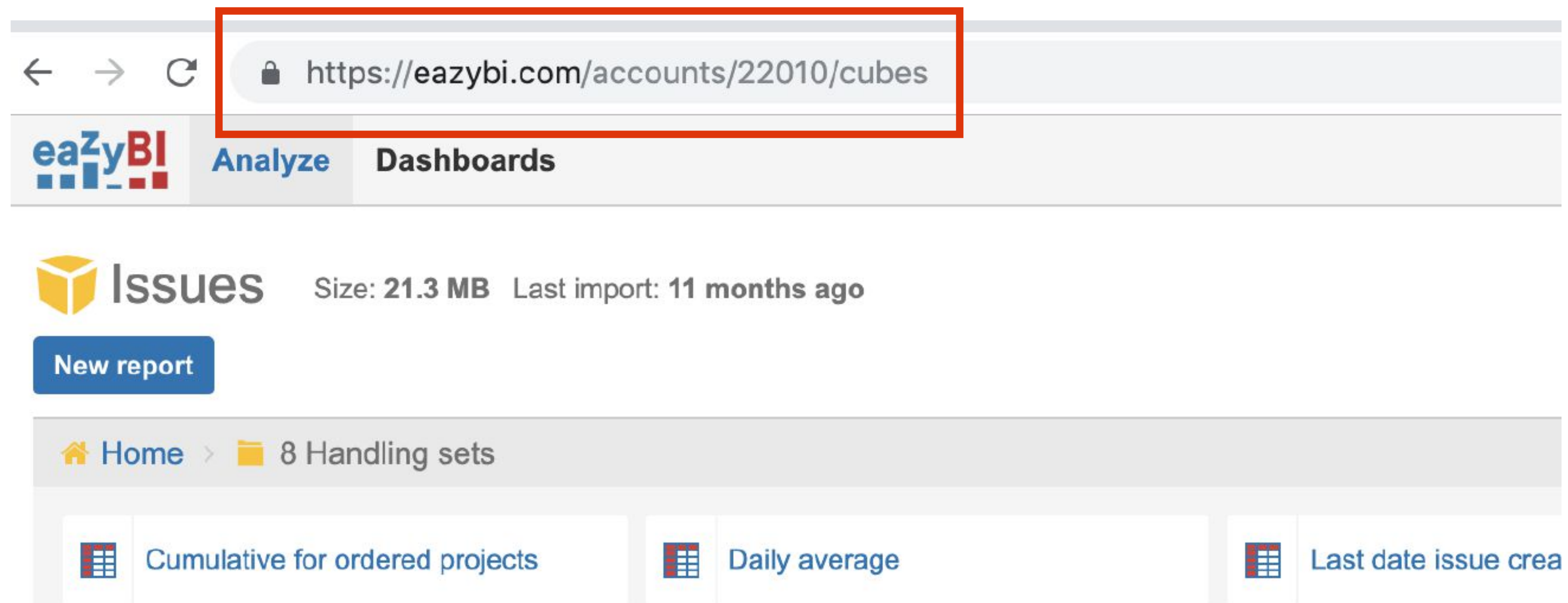
Range of members

“:”, Tail, Head, Item, Rank, etc.

Iteration

Iterate over the members and filter by patterns (Members, Descendants, Children, etc.)

Hands-on option



The screenshot displays the eazyBI web application interface. At the top, a browser's address bar shows the URL `https://eazybi.com/accounts/22010/cubes`, which is highlighted with a red rectangular box. Below the address bar is a navigation bar featuring the eazyBI logo on the left and two tabs, "Analyze" and "Dashboards", on the right. The "Analyze" tab is currently selected. Below the navigation bar, the main content area shows a section titled "Issues" with a yellow cube icon. To the right of the title, it indicates "Size: 21.3 MB" and "Last import: 11 months ago". Below this information is a blue button labeled "New report". Further down, a breadcrumb trail shows "Home" followed by a folder icon and "8 Handling sets". At the bottom of the screenshot, there is a row of three report cards, each with a small grid icon. The first card is titled "Cumulative for ordered projects", the second is "Daily average", and the third is "Last date issue crea".

CREATING SETS

Enumeration

- ➔ Individual members with full path
- ➔ Typeahead feature and bookmarking
- ➔ Alternative: Filter by pattern

Define calculated member formula

[Project] . [all Demo] =

```
1 Aggregate(  
2   { [Project] . [DEMO Alfa],  
3     [Project] . [DEMO Beta],  
4     [Project] . [DEMO Gamma]  
5   }  
6 )
```

Formatting default

CREATING SETS

Range of dimension members

- ➔ Define range using “:”
- ➔ Time dimension might have missing members

[Measures].[First 10 days of a month] =

```
1  -- annotations.group = 8 Handling sets
2  Sum(
3      { [Time].CurrentMember.FirstChild:
4        [Time].CurrentMember.Children.Item(9) },
5      [Measures].[Issues created]
6  )
```




Questions?

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