

## Activity A08\_Salary\_Planning

In this activity we open a pre-built model which has one tab with a number of views which come from a payroll model. We will begin by examining the existing model and then go on to complete the solution.

### Examine the Multi Currency Revenue tab.

1. Open A08\_Salary\_Planning\_Before.cdd (which is supplied with the activity resources) and **Save As** A08\_Salary\_Planning.cdd.

Examine the Salary Planning tab of this cdd file. It should look like the screen shot below. You will need to scroll across and down to see all of the content.

**Pay Raise By Grade and Performance**

	Good	Average	Poor
A	5.00%	3.00%	0.00%
B	5.00%	3.00%	0.00%
C	4.00%	2.00%	0.00%
D	4.00%	2.00%	0.00%
E	3.00%	1.00%	0.00%

**Existing Employee**

Employee	Current Salary	Current Grade	Performance	Salary After Pay Raise	Leave Month	New Grade	Grade Change Month
Existing Empl...	260,000			0			
Andy Apple	100,000	A	Good	0	Jun		
Anthony Ant	0			0			
Anne Aardwark	0			0			
Anita Amazon	0			0			
Brian Badger	0			0			
Bob Bobcat	0			0			
Bernadette Bean	0			0			

**Salary And Benefits**

	Total of	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Head...	4	4	0	0	0	0	0	0	0	0	0	0	0
Joiners	3	0	1	0	1	1	0	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0	0	0	0
Closing Headc...	0	4	1	0	1	1	0	0	0	0	0	0	0
Grade													
Salary	14,167	0	1,667	0	4,167	8,333	0	0	0	0	0	0	0
Pension	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Benefits	842	0	50	0	208	583	0	0	0	0	0	0	0
Employers Tax	1,417	0	167	0	417	833	0	0	0	0	0	0	0
Employee Cost	16,425	0	1,883	0	4,792	9,750	0	0	0	0	0	0	0
Employee Tax	1,700	0	200	0	500	1,000	0	0	0	0	0	0	0
New Grade													
Last NZ New G...													

**New Employee Details**

	Joiners Month	Joiners Salary	Joiners Grade
New Empl...		170,000	
N001	May	100,000	E
N002	Feb	20,000	A
N003	Apr	50,000	C
N004		0	
N005		0	

**Benefit Assumptions**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Other Benefits %	A 3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.50%	3.50%	3.50%	3.50%
	B 4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.50%	4.50%	4.50%	4.50%
	C 5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.50%	5.50%	5.50%	5.50%
	D 6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.50%	6.50%	6.50%	6.50%
	E 7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.50%	7.50%	7.50%	7.50%
Pension %												

**Tax Assumptions**

	Jan	Feb	Mar	Apr	May
Employers Tax %	10.0%	10.0%	10.0%	10.0%	10.0%
Employees Tax %	12.0%	12.0%	12.0%	12.0%	12.0%

## Examine the contents of the Salary Planning tab

### Pay Raise By Grade and Performance cube

	Good	Average	Poor
A	5.00%	3.00%	0.00%
B	5.00%	3.00%	0.00%
C	4.00%	2.00%	0.00%
D	4.00%	2.00%	0.00%
E	3.00%	1.00%	0.00%

This is an assumption cube holding the percentage pay raise that will be applied after the performance rating has been selected by the employees' manager.

### Existing Employee cube

	Current Salary	Current Grade	Performance	Salary After Pay Raise	Leave Month	New Grade	Grade Change Month
Existing Emplo...	260,000			0			
Andy Apple	100,000	A	Good	0	Jun		
Anthony Ant	0			0			
Anne Aardwark	0			0			
Anita Amazon	0			0			
Brian Badger	0			0			

This cube is designed for the managers to enter a performance rating, a leave month, a new grade and the month that this new grade will become active for existing employees. There is a Department explore point for this cube. Note that currently all employees appear for all departments. In this activity will ensure that only the employees that are assigned to the department will show for that department. Also we will add a cube calculation for the Salary after Pay Raise using the pay raise percentages in the Pay Raise by Grade and Performance assumption cube (see above) depending on the performance rating of the employee.

### New Employee Details cube

New Employee Details			
	Joiners Month	Joiners Salary	Joiners Grade
[-] New Emplo...		170,000	
N001	May	100,000	E
N002	Feb	20,000	A
N003	Apr	50,000	C
N004		0	
N005		0	

This cube is designed to allow the manager to plan for a number of un-named new employees. There is provision for up to 5 new employees and the data required is the joiner month, salary and month.

### Salary and Benefits cube

Salary And Benefits													
<span>salary</span> <span>months</span> <span>Total Employees</span> <span>Facilities</span> <span>Budget</span>													
	Total of	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Headc...	4	4	0	0	0	0	0	0	0	0	0	0	0
Joiners	3	0	1	0	1	1	0	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0	0	0	0
Closing Headc...	0	4	1	0	1	1	0	0	0	0	0	0	0
Grade													
Salary	14,167	0	1,667	0	4,167	8,333	0	0	0	0	0	0	0
Pension	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Benefits	842	0	50	0	208	583	0	0	0	0	0	0	0
Employers Tax	1,417	0	167	0	417	833	0	0	0	0	0	0	0
Employee Cost	16,425	0	1,883	0	4,792	9,750	0	0	0	0	0	0	0
Employee Tax	1,700	0	200	0	500	1,000	0	0	0	0	0	0	0
New Grade													
Last NZ New G...													

This is the summary data for both existing and new employees by department. The Department explore point works for this cube as well. There are already a number of cube calculations built for this cube. However we will add those required to complete this cube, practicing and learning more complex functionality as we do.

### Pay Raise Month cube

Budget	
Pay Raise Month	Apr

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This is an assumption cube to set the Pay Raise month for all employees. In this activity we will use the month drop down to select the pay raise month instead of a month index as we have used previously.

### Benefits Assumptions cube and explore point

Benefit Assumptions												
benefits	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Other Benefits %	A 3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.50%	3.50%	3.50%	3.50%
Pension %	B 4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.50%	4.50%	4.50%	4.50%
	C 5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.50%	5.50%	5.50%	5.50%
	D 6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.50%	6.50%	6.50%	6.50%
	E 7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.50%	7.50%	7.50%	7.50%

This is an assumption cube for the Other Benefits % and the Pension % for the Payroll Plan

### Tax Assumptions cube

Tax Assumptions									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Employers Tax %	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	11.0%	11.0%	11.0%
Employees Tax %	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	13.0%	13.0%	13.0%

This is an assumption cube to hold the tax percentages across the 12 months for both employees and employer.

### Existing Employee cube – controlling which employees show on the screen

We see that there are a number of employees with no data against them. That is because we are focused on the Facilities department and not all of the employees work in this department. If we apply zero suppression to the view we will only see the employees with data for the department in focus.

2. Select the zero suppression icon and then select Rows

	Current Salary	Current Grade	Performance	Salary After Pay Raise	Leave Month	New Grade	Grade Change Month
Existing Employees	260,000			0			
Andy Apple	100,000	A	Good	0	Jun		
Anthony Ant	0			0			
Anne Aardwark	0			0			
Anita Amazon	0			0			
Brian Badger	0			0			

- To test that you are now only seeing the employees for that department use the explore point to change to HR and see that the employees change

Facilities Department

HR Department

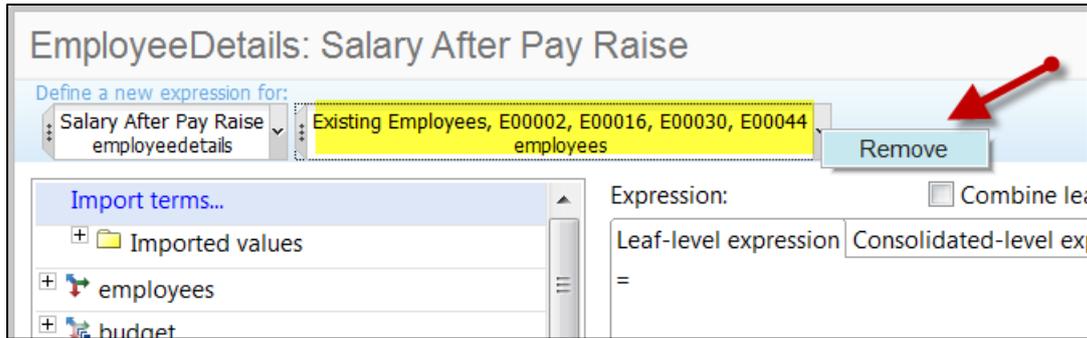
	Current Salary	Current Grade
Existing Employees	260,000	
Andy Apple	100,000	A
Dianne Dawkins	60,000	B
Harry Howard	20,000	D
Kiera Knight	80,000	A

	Current Salary	Current Grade
Existing Employees	220,000	
Anthony Ant	90,000	A
Dora Daniels	50,000	B
Hugh Heights	10,000	E
Kelly Kimble	70,000	B

Note: This is not security. Controlling access to different employees data using TM1 security will be covered in a later activity

### Calculate the Salary After Pay raise in the Existing Employee cube

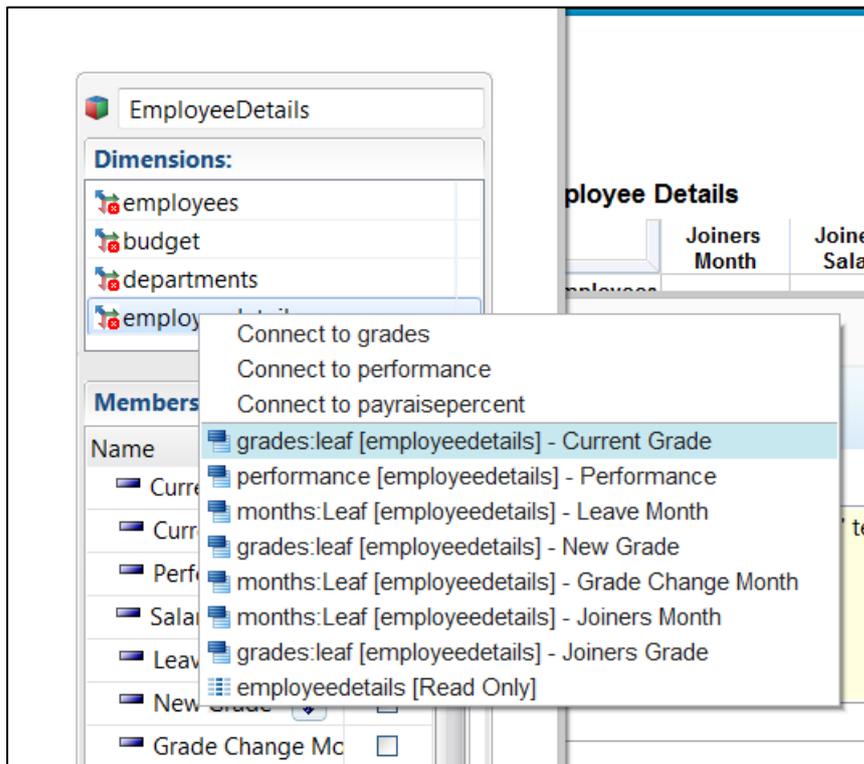
- Right click the Salary After Pay Raise column and select Create Cube Calculation.
- Name the cube calculation **Salary After Pay Raise** and click OK
- In the Cube calculation dialog right click onto the Employees dimension and select Remove



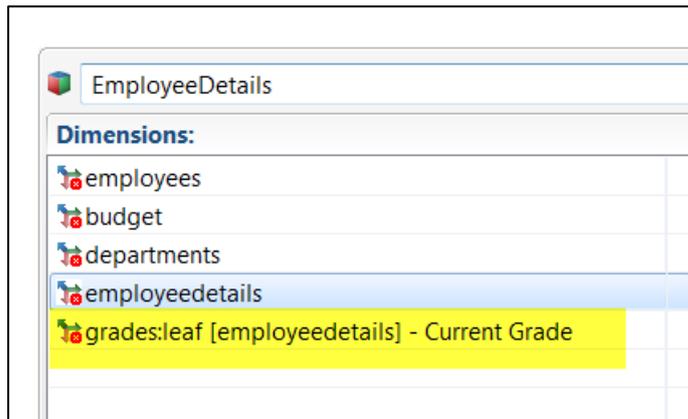
7. In the leaf-level expression drag in the **Current Salary**
8. Click onto Import term and name the term **Pay Raise**
9. Select **PayRaiseByGrade** as the source cube.
10. From the target cube click onto the employeeDetails dimension to expose the members.

Notice that a number of them have the icon representing a virtual dimension (as a result of the member having a pick list associated with it). In addition virtual dimensions are associated with this dimension via attributes.

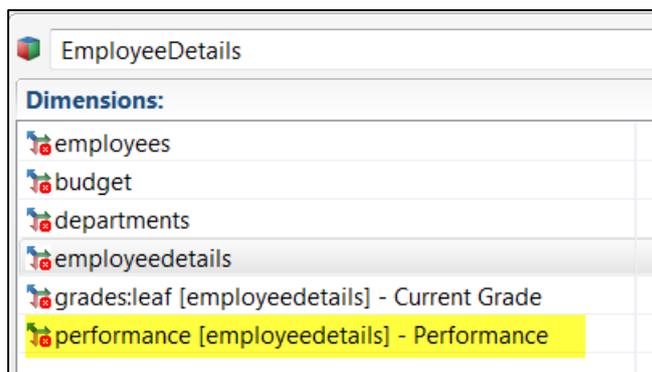
11. Now Right click the employeeDetails dimension to expose the attributes.



12. Select the Current Grade Note: if you are unable to select it directly use the keyboard down arrow to move through the list (this will be fixed in a subsequent release)
13. The result is that the Current Grade virtual dimension is now available for mapping



14. Repeat the above steps to expose the Performance virtual dimension



15. Now map the Grades dimension in the source cube to the Current Grade virtual dimension in the target cube. Select Automatic mapping.

Name: Pay Raise

**PayRaiseByGrade**

**Dimensions:**

- grades
- performance
- payraisepercent

**Members:**

Name	Links
Total of grades	
A	1
B	1
C	1
D	1
E	1

**Mappings**

Mapped Source	Mapped Target
A	A
B	B
C	C
D	D
E	E

**EmployeeDetails**

**Dimensions:**

- grades:leaf [employeeedetails] - Current Grade
- employees
- budget
- departments
- employeeedetails
- performance [employeeedetails] - Performan...

**Members:**

Name	Links
Total of grades	
A	1
B	1
C	1
D	1
E	1

16. Repeat for Performance

Name: Pay Raise

**PayRaiseByGrade**

**Dimensions:**

- grades
- performance
- payraisepercent

**Members:**

Name	Links
Good	1
Average	1
Poor	1

**Mappings**

Mapped Source	Mapped Target
Good	Good
Average	Average
Poor	Poor

**EmployeeDetails**

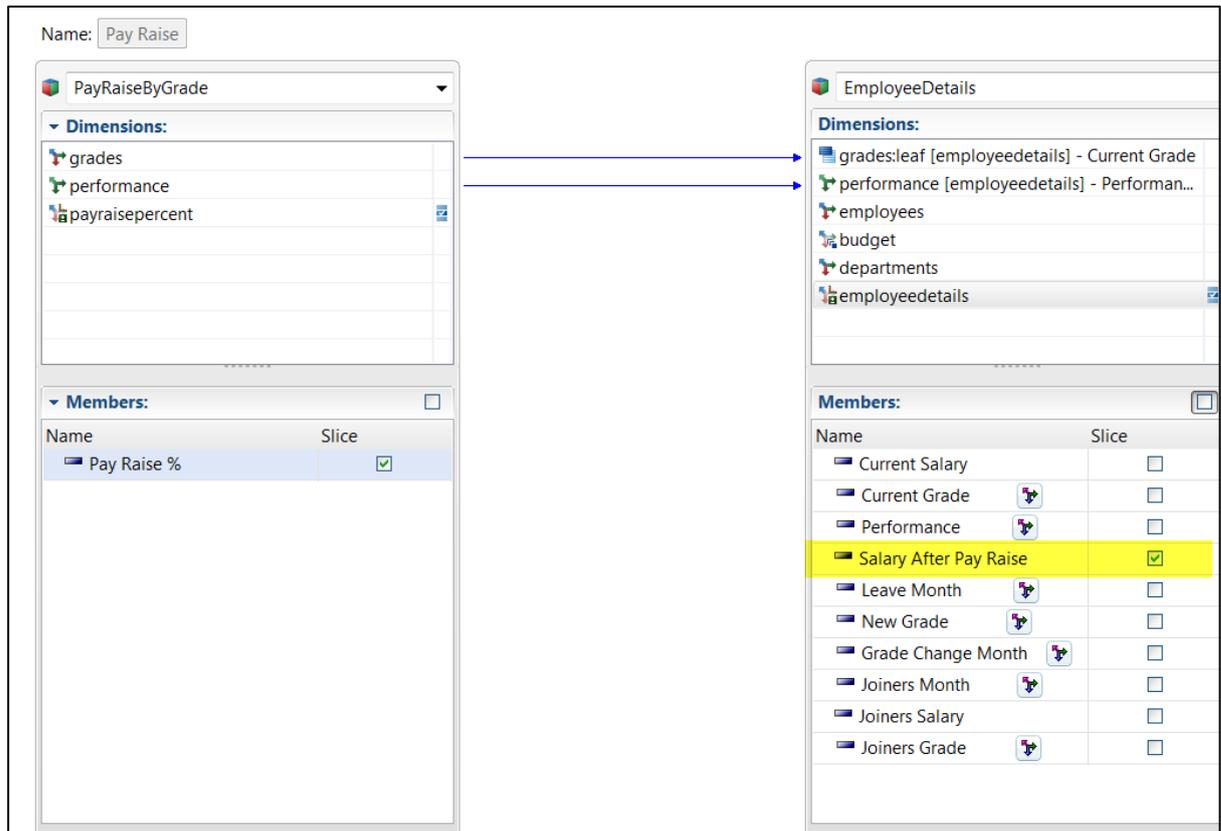
**Dimensions:**

- grades:leaf [employeeedetails] - Current Grade
- performance [employeeedetails] - Performan...
- employees
- budget
- departments
- employeeedetails

**Members:**

Name	Links
Good	1
Average	1
Poor	1

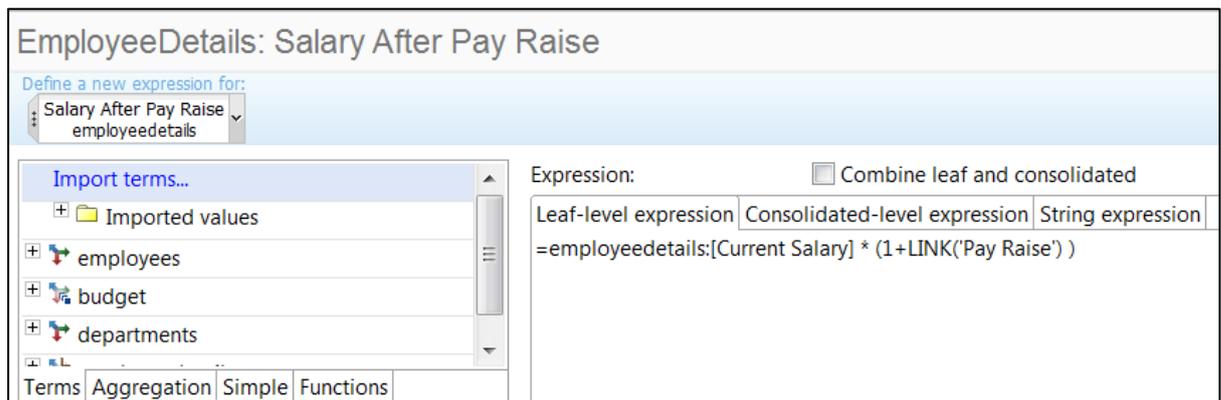
17. Select the Pay Raise % member of the payraisepercent dimension on the source cube.
18. Select all Employees, the budget item, all departments, and Salary After Pay raise from employeeedetails.



19. Click OK

20. Complete the cube calculation as shown below:

**=employeeedetails:[Current Salary] \* (1+LINK('Pay Raise'))**



21. Click OK

22. Check that the resulting calculation is as expected. Ensure you are on the Facilities department as this has a Performance rating entered.

	Good	Average	Poor
A	5.00%	3.00%	0.00%
B	5.00%	3.00%	0.00%
C	4.00%	2.00%	0.00%
D	4.00%	2.00%	0.00%
E	3.00%	1.00%	0.00%

	Current Salary	Current Grade	Performance	Salary After Pay Raise	Leave Month	New Grade	Grade Change Month
Existing Employees	260,000			272,000			
Andy Apple	100,000	A	Good	105,000	Jun		
Dianne Dawkins	60,000	B	Good	63,000		C	Jul
Harry Howard	20,000	D	Poor	20,000			
Kiera Knight	80,000	A	Good	84,000			

23. We can see that the employees who have a performance rating of Good have been given a 5% pay raise if they are an A or B grade, 4% if C or D and 3% if C. If they are Poor all grades get nothing (0% pay raise).
24. Optionally – change the performance rating and grade to further test. Use the undo functionality to reset the data to help with checking as you progress through the activity.

## Add the calculations to the Salaries and Benefits cube

### Opening Headcount – Jan only

Note that there is already an Opening Headcount for Jan.

The following Cube calculation has its scope set to Jan only. The conditional statement uses the existence of a starting salary in the Existing Employee cube to indicate headcount in the correct department.

salarybyemployee: Opening Headcount Jan

Define a new expression for:

Jan months Opening Headcount salary

Import terms...

- Imported values
- months
- departments
- budget

Expression:  Combine leaf and

Leaf-level expression Consolidated-level expression

=IF LINK('starting salary') >0 THEN 1 ELSE 0

This shows the leaf level data.

Salary And Benefits										
Total Employees										
departments										
Opening Headcount										
Jan										
Budget										
Total of departments										
	Facilities	HR	Finance	Marketing	R&D	Support	Sales Support	Sale		
Existing Employees	89	4	4	4	5	5	4	10		
Andy Apple	1	1	0	0	0	0	0	0		
Anthony Ant	1	0	1	0	0	0	0	0		
Anne Aardwark	1	0	0	1	0	0	0	0		
Anita Amazon	1	0	0	0	1	0	0	0		
Brian Badger	1	0	0	0	0	1	0	0		
Bob Bobcat	1	0	0	0	0	0	1	0		
Bernadette Bean	1	0	0	0	0	0	0	1		
Brenda Bell	1	0	0	0	0	0	0	0		
Colin Cat	1	0	0	0	0	0	0	0		
Callum Cougar	1	0	0	0	0	0	0	0		

### Closing Headcount

25. The Closing headcount is a simple sum as below:

salarybyemployee: Closing Headcount

Define a new expression for:

Closing Headcount salary

Import terms...

- Imported values
- months
- departments

Expression:  Combine leaf and consolidated

Leaf-level expression Consolidated-level expression String expression

=salary:[Opening Headcount]+ salary:Joiners -salary:Leavers

### Opening headcount Feb – Dec

Note: The Opening Headcount for Feb – Dec is the Closing headcount for the previous month. E.g. Feb Opening Headcount is Jan Closing Headcount etc. We will use the Lag function in a cube calculation to achieve this.

26. With the view orientated as shown below highlight the Opening headcount for Feb to Dec.

Total of months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Headcount	4	4	0	0	0	0	0	0	0	0	0	0
Joiners	3	0	1	0	1	1	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0	0	0
Closing Headcount	0	4	1	0	1	1	0	0	0	0	0	0
Grade												
Salary	36,833	22,667	1,667	0	4,167	8,333	0	0	0	0	0	0
Pension	0	0	0	0	0	0	0	0	0	0	0	0
Other Benefits	1,624	783	50	0	208	583	0	0	0	0	0	0
Employers Tax	3,683	2,267	167	0	417	833	0	0	0	0	0	0
Employee Cost	42,144	25,716	1,884	0	4,792	9,750	0	0	0	0	0	0

27. Name the cube calculation Opening Headcount.

Note that the context is the months Feb to Dec.

28. In the terms pane click on the Function tab, expand the Time Based functions and double click LAG to select it.

salarybyemployee: Opening Headcount

Define a new expression for: Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec months

Opening Headcount salary

Time Based Functions

- CUMULATE
- DECUMULATE
- DIFFER
- GROW
- LAG
- LASTNZ
- PERIODDAYS
- PERIODEND
- PERIODMIDDLE
- PERIODSTART

Expression:  Combine leaf and consolidated

Leaf-level expression Consolidated-level expression String expression

=LAG([<Pad>], [<Inputs>])

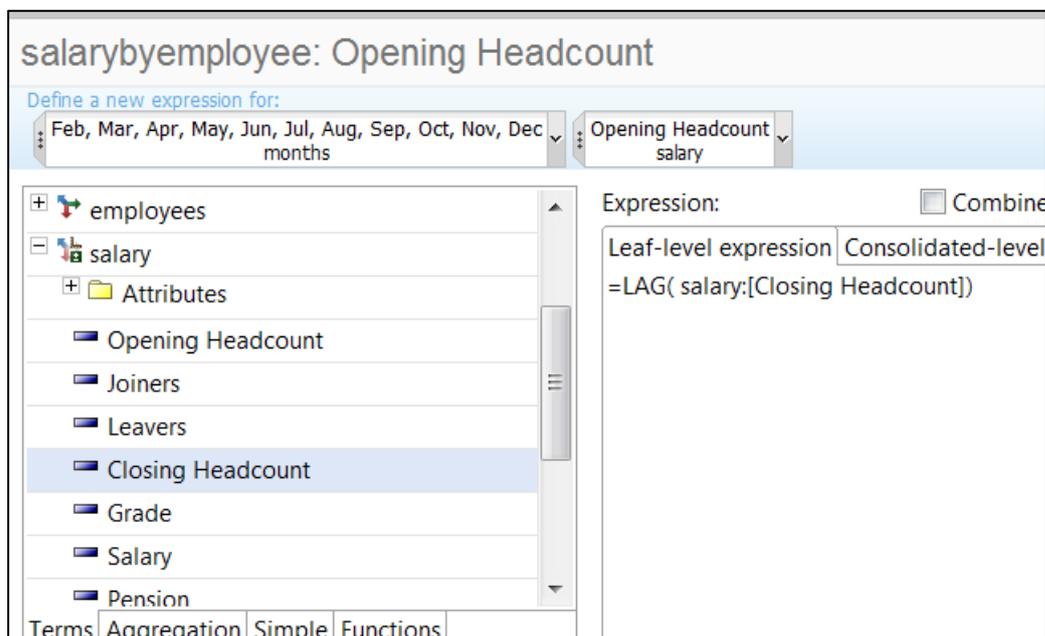
Terms Aggregation Simple Functions

Note: LAG calculates a result in one row by lagging an input from another row by 1 period. For example, the member 'Opening Balance' may use a function =LAG('Prime value', 'Closing Balance'). The <Pad> argument specifies the value returned by LAG for the first leaf member in the Time dimension; it may be another member in the dimension or a constant. If it is omitted, the user may key a value for this function into the first leaf member of the Time dimension.

29. To complete the LAG calculation click back to the terms tab, select Closing Headcount and drag into the expression to replace the Inputs parameter.

30. In this instance we are not using the Pad parameter so remove it from the calculation manually.
31. The resulting calculation will look as follows:

**=LAG( salary:[Closing Headcount])**



32. Click OK to save and apply the calculation and observe the result. You can see that the Closing Headcount of Jan is now the Opening Headcount of Feb and so on.

Salary And Benefits													
	months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Headcount	Total of months	4	4	4	5	5	6	7	7	7	7	7	7
Joiners		3	0	1	0	1	1	0	0	0	0	0	0
Leavers		0	0	0	0	0	0	0	0	0	0	0	0
Closing Headcount		7	4	5	5	6	7	7	7	7	7	7	7

### Joiners Calculation

33. Look at the Joiners Month in the New Employee Details cube. We see that there are joiners in Feb, Apr and May. These are reflected in the Joiners item in the Salary and Benefits cube

**Existing Employee**

	Current Salary	Current Grade	Performance	Salary After Pay Raise	Leave Month	New Grade	Grade Change Month
Existing Employees	260,000			272,000			
Andy Apple	100,000	A	Good	105,000	Jun		
Dianne Dawkins	60,000	B	Good	63,000		C	Jul
Harry Howard	20,000	D	Poor	20,000			
Kiera Knight	80,000	A	Good	84,000			

**New Employee Details**

	Joiners Month	Joiners Salary	Joiners Grade
New Employees		170,000	
N001	May	100,000	E
N002	Feb	20,000	A
N003	Apr	50,000	C
N004		0	
N005		0	

**Salary And Benefits**

Total of months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Opening Headcount	4	4	4	5	5	6	7	7	7	7	7	7
Joiners	3	0	1	0	1	1	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0	0	0
Closing Headcount	7	4	5	5	6	7	7	7	7	7	7	7

34. The cube calculation for these is as follows:

**salarybyemployee: Joiners**

Define a new expression for:

Joiners salary

Import terms...

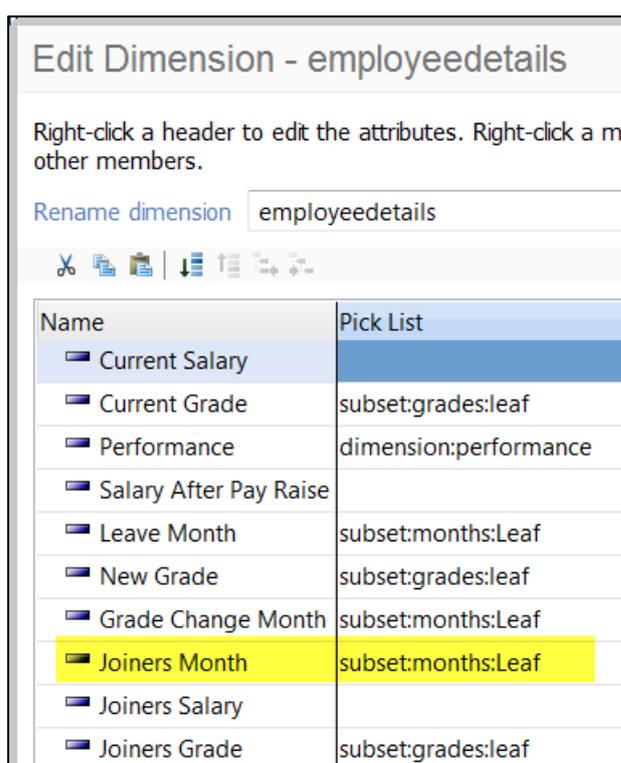
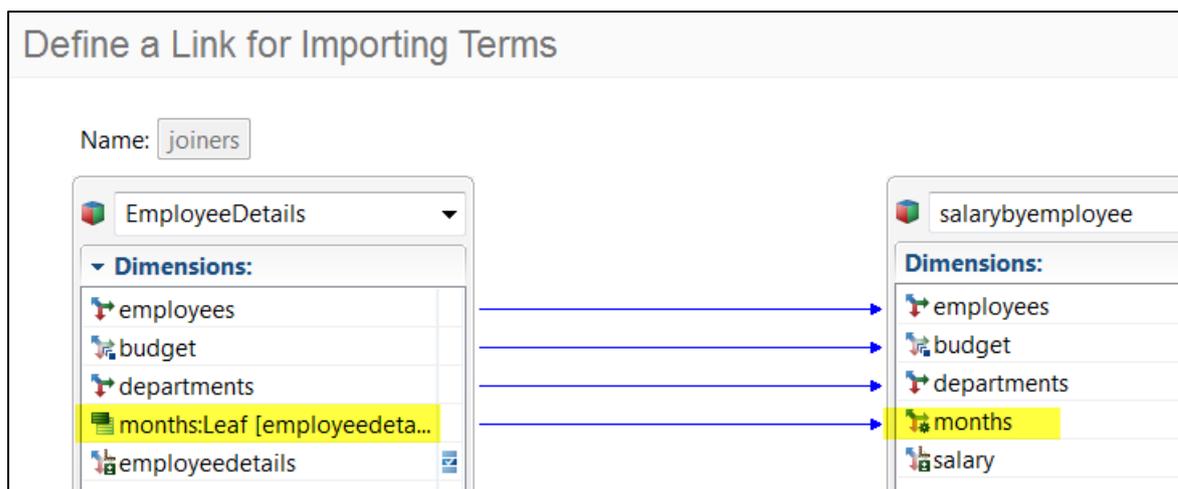
- Imported values
- months
- departments

Expression:  Combine level

Leaf-level expression Consolidated-level expression

=IF LINK('joiners') >0 THEN 1 ELSE 0

35. Open the Import Link to see how this works. The link is an accumulation link using the Months virtual dimension on the source (as a result of the picklist on the Joiners Month member of the employeesdetail dimension) mapping to the months dimension on the target.



### Leavers Calculation

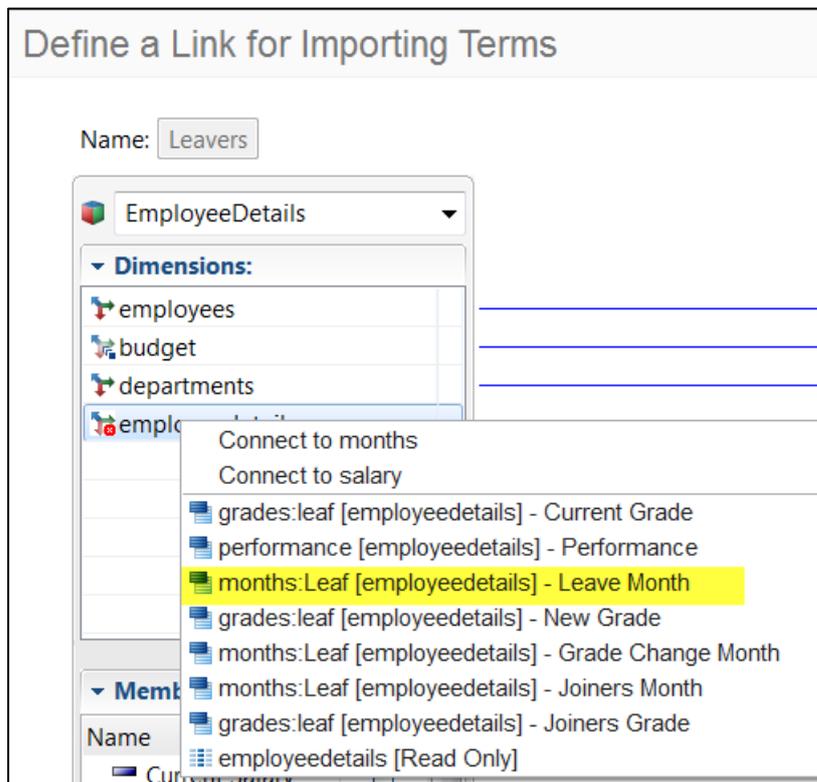
Note: we will create the Leavers calculation using the same technique as was used for the Joiners.

36. Right click on the Leavers item in the Salary and Benefits cube and select Create Calculation.
37. Name the calculation **Leavers**.
38. Inside the cube calculation dialog create an import term.

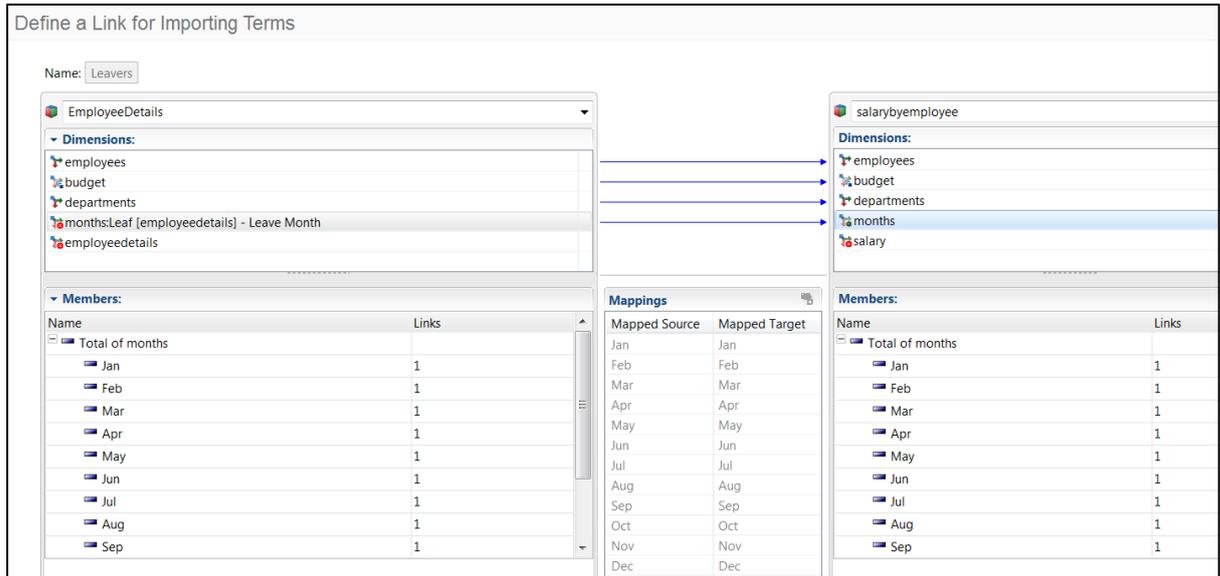
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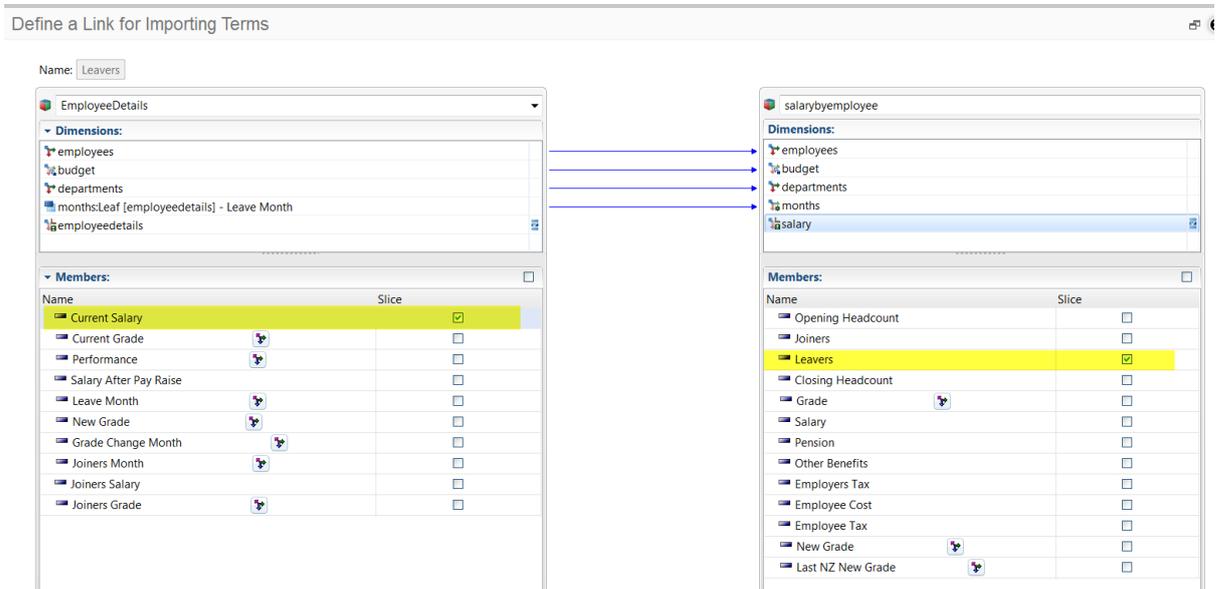
39. Name the import term **Leavers**.
40. Select the EmployeeDetails cube on the source.
41. Right click the employeedetails dimension on the source to expose the virtual dimension.
42. Select the Leave Month (if it is not selectable then use the down arrow on the keyboard to move to it and return to select it – this will be fixed in a future release)



43. Map the Leave Month virtual dimension in the source to the Months dimension on the target and select automatic.

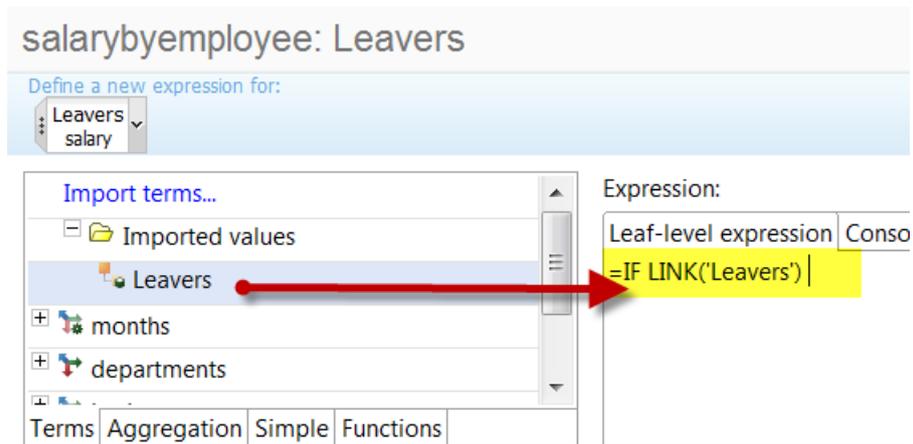


44. Complete the import link by selecting Current Salary from the employeeedetails dimension on the source, and leavers from the salary dimension on the target.



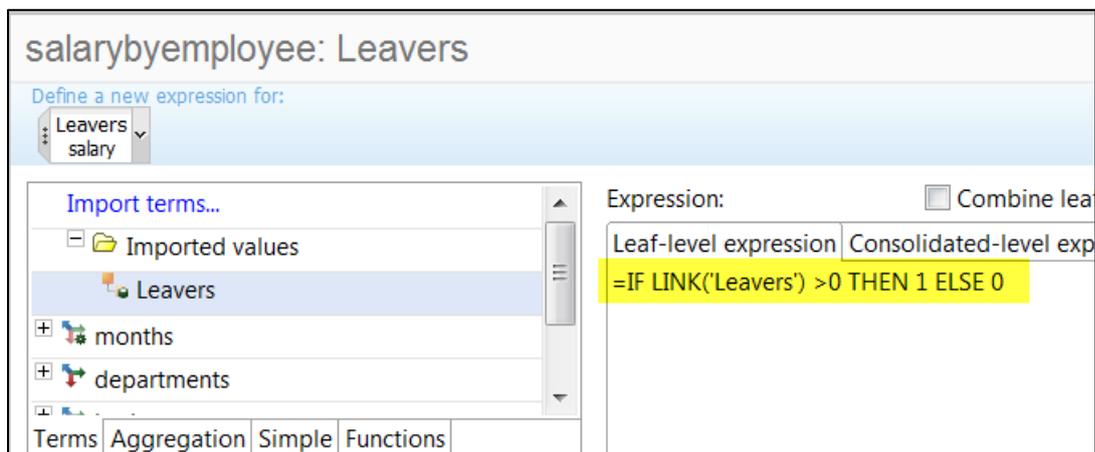
45. Click OK to return to the Cube Calculation.

46. Construct the conditional formula by typing in IF then dragging in the new import term as show below.



47. Complete the calculation as follows:

**=IF LINK('Leavers') >0 THEN 1 ELSE 0**



48. Select OK and check the result which should look as below.

Existing Employee							
	Current Salary	Current Grade	Performance	Salary After Pay Raise	Leave Month	New Grade	Grade Change Month
Existing Employees	260,000			272,000			
Andy Apple	100,000	A	Good	105,000	Jun		
Dianne Dawkins	60,000	B	Good	63,000		C	Jul
Harry Howard	20,000	D	Poor	20,000			
Kiera Knight	80,000	A	Good	84,000			

Salary And Benefits										
	Total of months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
Opening Headcount	4	4	4	5	5	6	7	6	6	6
Joiners	3	0	1	0	1	1	0	0	0	0
Leavers	1	0	0	0	0	0	1	0	0	0
Closing Headcount	6	4	5	5	6	7	6	6	6	6
Grade										
Salary	333,250	22,667	24,333	24,333	28,500	36,833	28,083	28,083	28,083	28,083
Pension	0	0	0	0	0	0	0	0	0	0

### Complete the grade change functionality

We want to be able to take the grade change information entered into the Existing Employee cube and apply it to the Salaries and benefits cube.

In our example we have Dianne Dawkins changing from a B grade to a C grade in July.

49. In the Salary and Benefits cube select Dianne Dawkins from the Employees dimension on the context of the cube.

Note that her Grade remains B throughout the year. However there is a cube calculation using an accumulation import link which populates the New Grade. We see that it is C for July but as yet it is not being propagated into the other months (Aug – Dec). We will use the Last Non-zero function to do this.

## IBM Cognos TM1 Enablement Program – Activity A08

salary													
months													
Dianne Dawkins													
Facilities													
Budget													
Total of months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Opening Headcount	1	1	1	1	1	1	1	1	1	1	1	1	1
Joiners	0	0	0	0	0	0	0	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0	0	0	0
Closing Headcount	1	1	1	1	1	1	1	1	1	1	1	1	1
Grade	B	B	B	B	B	B	B	B	B	B	B	B	B
Salary	63,000	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250
Pension	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Benefits	2,625	210	210	210	210	210	210	210	236	236	236	236	236
Employers Tax	6,615	525	525	525	525	525	525	578	578	578	578	578	578
Employee Cost	72,240	5,985	5,985	5,985	5,985	5,985	5,985	6,038	6,038	6,064	6,064	6,064	6,064
Employee Tax	7,875	630	630	630	630	630	630	683	683	683	683	683	683
New Grade								C					
Last NZ New Grade													

50. Right Click on the Last NZ new grade member and select Create cube calculation.
51. Name the cube calculation **Last NZ New Grade**
52. In the Terms pane select the Functions tab
53. Expand the Time Based functions and select Last NZ. Drag this into the **String** Expression area.
54. Go back to the Terms tab and select New Grade from the Salary dimension. Drag this onto the expression on top of the <Input> generic parameter.
55. Click OK. If you get an error check that you have created the expression in the **String Expression** tab and not the Leaf-level expression tab – which is where we mostly work. You can cut and paste the expression between tabs if required but remember to check that you only have one = sign in the final expression as the system will put one in for you.
56. The result will look as follows:

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IBM Cognos TM1 Enablement Program – Activity A08

The screenshot shows a budget grid for 'salary' by month (Jan-Oct) and a corresponding expression editor for 'Last NZ New Grade'.

Total of months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Opening Headcount	1	1	1	1	1	1	1	1	1	1
Joiners	0	0	0	0	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0
Closing Headcount	1	1	1	1	1	1	1	1	1	1
Grade	B	B	B	B	B	B	B	C	C	C
Salary	63,000	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250
Pension	0	0	0	0	0	0	0	0	0	0
Other Benefits	2,940	210	210	210	210	210	210	263	263	289
Employers Tax	6,615	525	525	525	525	525	525	578	578	578
Employee Cost	72,555	5,985	5,985	5,985	5,985	5,985	5,985	6,090	6,090	6,116
Employee Tax	7,875	630	630	630	630	630	630	683	683	683
New Grade								C	C	C
Last NZ New Grade								C	C	C

The expression editor for 'Last NZ New Grade' shows the following configuration:

- Define a new expression for: Last NZ New Grade salary
- Expression:  Combine leaf and consolidated
- String expression tab selected: =LASTNZ(salary:[New Grade])

Note that the Grade has now also changed to reflect the change occurring in July.

57. Optionally examine the Cube calculations/import link for New Grade and Grade so that you understand how this is working. Remember that the expressions are in the String Expression tab.

The screenshot shows the expression editor for 'New Grade'.

Define a new expression for: New Grade salary

Import terms... window shows:

- Imported values
- new grade
- months
- departments

Expression:  Combine leaf and consolidated

String expression tab selected: =LINK('new grade')

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### Define a Link for Importing Terms

Name:

**EmployeeDetails**

**Dimensions:**

- employees
- budget
- departments
- months:Leaf [employeeedeta...]
- employeeedetails

**Members:**

Name	Links
Current Salary	
Current Grade	
Performance	
Salary After Pay	
Leave Month	
New Grade	1
Grade Change Mc	
Joiners Month	

**Mappings**

Mapped S...	Mapped T...
New Grade	New Grade

**salarybyemployee**

**Dimensions:**

- employees
- budget
- departments
- months
- salary

**Members:**

Name	Links
Opening	
Joiners	
Leavers	
Closing	
Grade	
Salary	
Pension	
Other Benefits	

### salarybyemployee: Grade

Define a new expression for: **Grade**

Grade salary

**Import terms...**

- Imported values
- months
- departments
- budget

Terms | Aggregation | Simple | Functions

Expression:  Combine leaf and consolidated

Leaf-level expression | Consolidated-level expression | **String expression**

```
=IF salary:[Closing Headcount] =0 THEN "" ELSE IF employees.New = "Yes" THEN LINK('joinersgrade') ELSE IF salary:[Last NZ New Grade] <> "" THEN salary:[Last NZ New Grade] ELSE LINK('starting grade')
```

58. Re-orientate the cube to look at New Employee N001. See that this conditional logic is bringing in the joiners grade of E into May (their starting month) through to Dec.

New Employee Details			
	Joiners Month	Joiners Salary	Joiners Grade
[-] New Employees		170,000	
N001	May	100,000	E
N002	Feb	20,000	A
N003	Apr	50,000	C
N004		0	
N005		0	

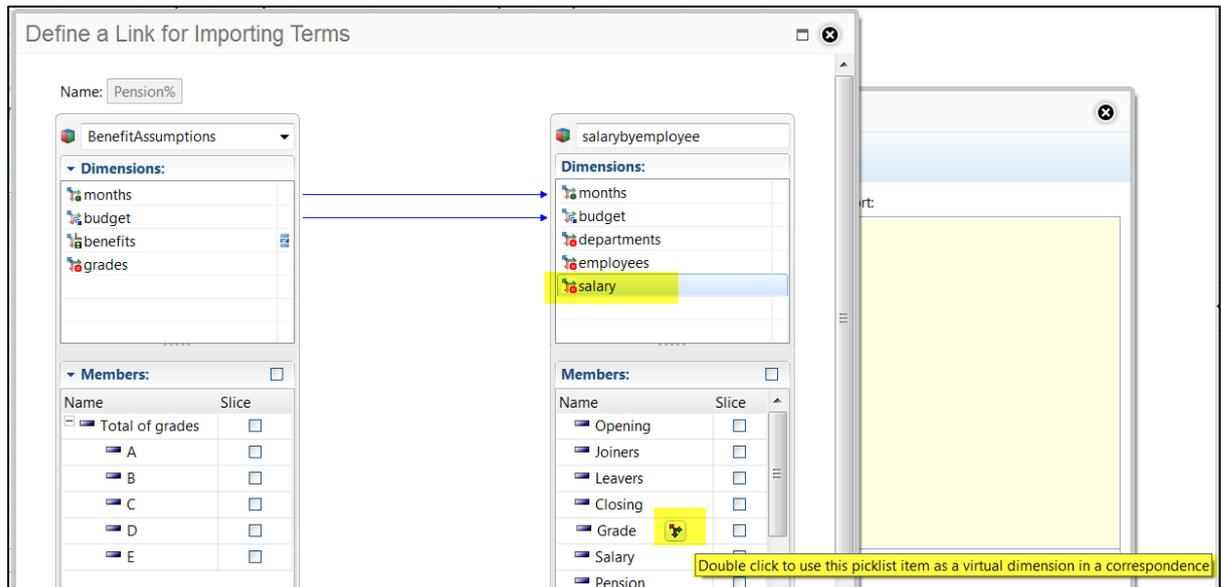
Total of months													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Opening Headcount	0	0	0	0	0	1	1	1	1	1	1	1	1
Joiners	1	0	0	0	1	0	0	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0	0	0	0
Closing Headcount	1	0	0	0	1	1	1	1	1	1	1	1	1
Grade	E				E	E	E	E	E	E	E	E	E
Salary	66,667	0	0	0	8,333	8,333	8,333	8,333	8,333	8,333	8,333	8,333	8,333
Pension	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Benefits	4,833	0	0	0	583	583	583	583	625	625	625	625	625
Employers Tax	7,167	0	0	0	833	833	917	917	917	917	917	917	917
Employee Cost	78,667	0	0	0	9,750	9,750	9,833	9,833	9,875	9,875	9,875	9,875	9,875
Employee Tax	8,500	0	0	0	1,000	1,000	1,083	1,083	1,083	1,083	1,083	1,083	1,083
New Grade													
Last NZ New Grade													

### Pension Calculation

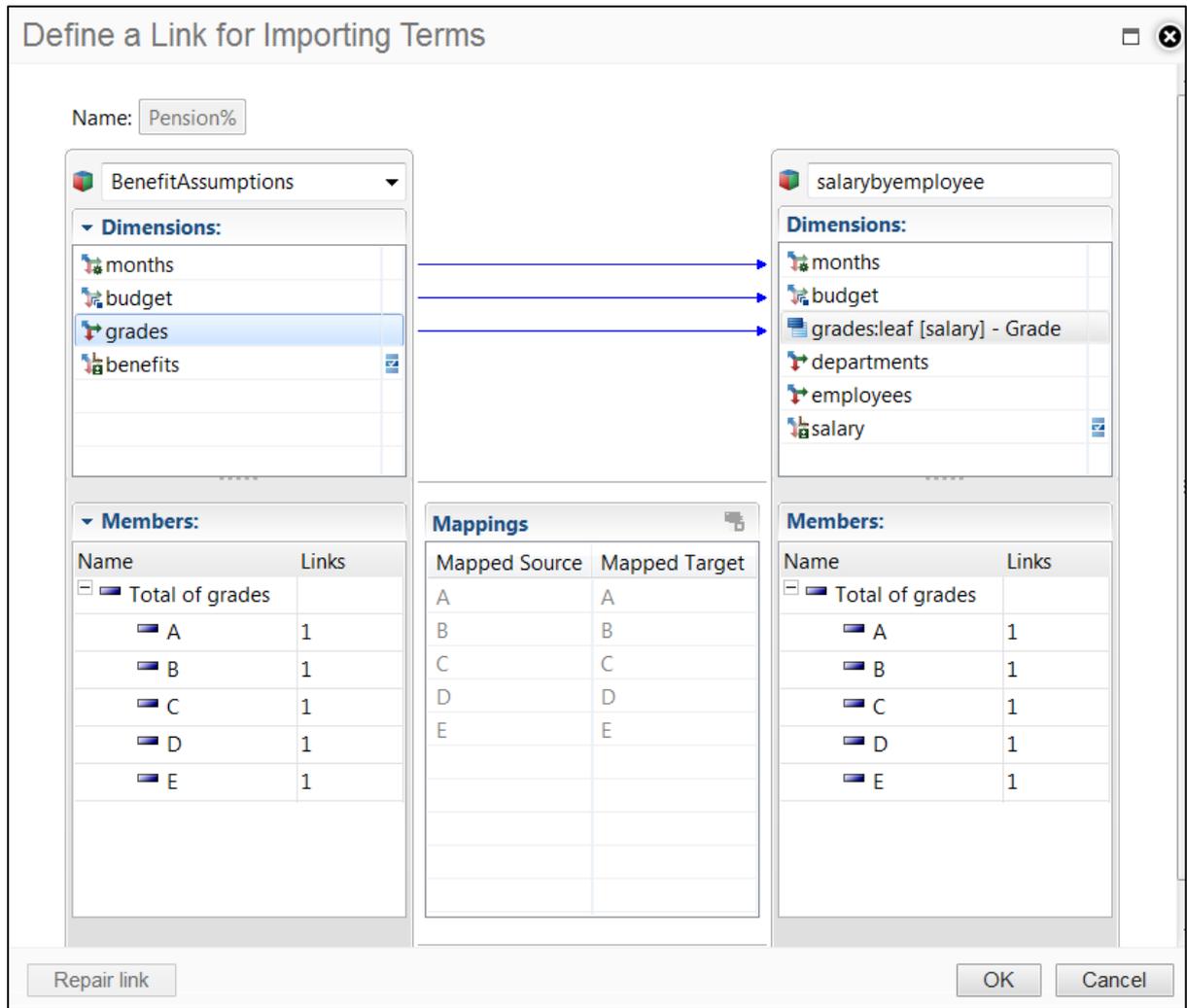
59. Re-orientate the cube to the existing employee Dianne Dawkins to make it easier to check this calculation as she changes grade.
60. Right click on the Pension item and select Create Cube Calculation.
61. Name the calculation **Pension**.
62. Start the calculation by dragging in the Salary into the Leaf-level expression.

Create a Look up type import link to bring in the Pension% from the Benefits Assumptions cube.

63. Click on Import terms
64. Name the import term **Pension%**
65. Select Benefits Assumption as the source cube.
66. On the Benefits dimension on the source select the **Pension%** item.
67. Expose the **Grade** virtual dimension on the target cube by clicking the icon next to the Grade item in the Salary dimension on the target.



68. Map the Grade dimension from the source to this virtual dimension in the target (thus creating a Look up import link). Use automatic mapping.
69. Select all Departments and All Employees.
70. Select Pension from the Salary dimension on the target.



71. Click OK

72. Drag the import term into the Leaf-level expression as follows:

**=salary:Salary \* LINK('Pension%')**

salarybyemployee: Pension

Define a new expression for:

Pension salary

Import terms...

- Imported values
  - Pension%
- months
- departments
- budget
- employees

Expression:  Combine leaf and consolidated

Leaf-level expression	Consolidated-level expression	String expression
=salary:Salary * LINK("Pension%")		

73. Click OK and check the result in the cube. It should look as follows:

Total of months													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Opening Headcount	1	1	1	1	1	1	1	1	1	1	1	1	1
Joiners	0	0	0	0	0	0	0	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0	0	0	0
Closing Headcount	1	1	1	1	1	1	1	1	1	1	1	1	1
Grade	B	B	B	B	B	B	C	C	C	C	C	C	C
Salary	63,000	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250
Pension	4,253	315	315	315	315	315	315	394	394	394	394	394	394
Other Benefits	2,940	210	210	210	210	210	210	263	263	289	289	289	289
Employers Tax	6,615	525	525	525	525	525	525	578	578	578	578	578	578
Employee Cost	76,808	6,300	6,300	6,300	6,300	6,300	6,300	6,484	6,484	6,510	6,510	6,510	6,510
Employee Tax	7,875	630	630	630	630	630	630	683	683	683	683	683	683
New Grade							C						
Last NZ New Grade							C	C	C	C	C	C	C

74. Note how the Pension changes from 315 to 394 in July when she has a grade change. You can see that the Pension% changes from 6% for a B grade Jan – Jun to 7.5% for a C grade Jul – Dec.

Benefit Assumptions													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Pension %	A	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%
Other Benefits %	B	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
	C	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.50%	7.50%	7.50%	7.50%	7.50%	7.50%
	D	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%
	E	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%

### Correcting the monthly salary

We see that Dianne Dawkins is paid 60K before her pay raise. The pay raise takes place in April so in Jan/Feb and March she should be getting 5K per month. If we look at the Salary and Benefits cube we notice that she is actually getting 525. We need to correct this.

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Salary And Benefits													
salary   months   Dianne Dawkins   Facilities   Budget													
Total of months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Opening Headcount	1	1	1	1	1	1	1	1	1	1	1	1	1
Joiners	0	0	0	0	0	0	0	0	0	0	0	0	0
Leavers	0	0	0	0	0	0	0	0	0	0	0	0	0
Closing Headcount	1	1	1	1	1	1	1	1	1	1	1	1	1
Grade	B	B	B	B	B	B	B	C	C	C	C	C	C
Salary	63,000	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250
Pension	4,253	315	315	315	315	315	315	394	394	394	394	394	394
Other Benefits	2,940	210	210	210	210	210	210	263	263	289	289	289	289
Employers Tax	6,615	525	525	525	525	525	525	578	578	578	578	578	578
Employee Cost	76,808	6,300	6,300	6,300	6,300	6,300	6,300	6,484	6,484	6,510	6,510	6,510	6,510
Employee Tax	7,875	630	630	630	630	630	630	683	683	683	683	683	683
New Grade								C					
Last NZ New Grade								C	C	C	C	C	C

75. Right click anywhere on the cube and select Open cube Calculation.

76. Select Salary

Total of	May	Jun	Jul	Aug
Opening Headcount	1	1	1	1
Joiners	0	0	0	0
Leavers	0	0	0	0
Closing Headcount	1	1	1	1
Grade	B	C	C	C
Salary	5,250	5,250	5,250	5,250

- Cut (Ctrl+X)
- Copy (Ctrl+C)
- Paste (Ctrl+V)
- Drill Down
- Clear Values
- Format Measure Opening Headcount
- Clear Format of Measure Opening Headcount
- Rollup (Opening Headcount)
- Create Cube Calculation...
- Open Cube Calculation**
- Delete Cube Calculation
- Show Value as
- Spread Data
- Hold
- Release All
- Comment
- Browse All Comments...
- Lock Widget
- Insert Dynamic Value
- Conditional Style...

- salarybyemployee: Closing Headcount
- salarybyemployee: Employee Cost
- salarybyemployee: Employee Tax
- salarybyemployee: Employers Tax
- salarybyemployee: Grade
- salarybyemployee: Joiners
- salarybyemployee: Last NZ New Grade
- salarybyemployee: Leavers
- salarybyemployee: New Grade
- salarybyemployee: Opening Headcount
- salarybyemployee: Opening Headcount
- salarybyemployee: Other Benefits
- salarybyemployee: Pension
- salarybyemployee: Salary**

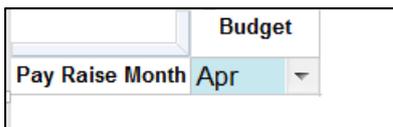
77. Examine the conditional calculation

Expression:  Combine leaf and consolidated

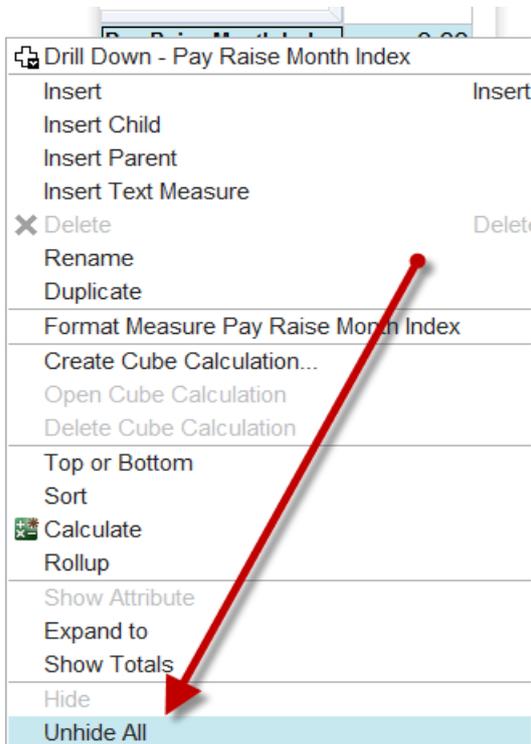
Leaf-level expression	Consolidated-level expression	String expression
=IF salary:[Closing Headcount] =0 THEN 0 ELSE IF employees.New ="Yes" THEN LINK('joinerssalary') /12 ELSE IF months.MonthIndex >=LINK('monthindexofpayraise') THEN LINK('salaryafterpayraise')/12 ELSE LINK('opening salary') /12		

We see that the salary before the payraise starts is conditional on the 'monthindexofpayraise' which is linked in from the PayRaiseMonth cube.

78. Navigate to the PayRaiseMonth cube on the Payroll Planning tab.



79. Right click on the Pay Raise Month item and select Unhide All



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Note that the hidden item Pay Raise Month Index is zero which is why the conditional is not working correctly.

Budget	
Pay Raise Month	Apr
Pay Raise Month Index	0.00

80. Right click onto the Pay Raise Month Index item and select create Cube Calculation.
81. Name it **Pay Raise Month Index**
82. Create an Import term called **Month Index**
83. Select the Month Index cube as the source.
84. Create the look up link by exposing the virtual dimension of Months from the PayRaiseMonth dimension.

Define a Link for Importing Terms

Name: Month Index

MonthIndex

**Dimensions:**

- budget
- months

**Members:**

PayRaiseMonth

**Dimensions:**

- budget
- payraisemonth
- months:Leaf [payraisemonth]...

**Members:**

Name	Slice
Pay Raise Month	<input type="checkbox"/>
Pay Raise Month	<input type="checkbox"/>

A blue arrow points from the 'months' dimension in the source to the 'months:Leaf [payraisemonth]...' dimension in the target.

85. Map the Months dimension in the source with this payraisemonth virtual dimension in the target. Use Automatic mapping.

### Define a Link for Importing Terms

Name:

**MonthIndex**

**Dimensions:**

- budget
- months

**Members:**

Name	Links
Total of months	
Jan	1
Feb	1
Mar	1
Apr	1
May	1
Jun	1
Jul	1
Aug	1

→

→

**PayRaiseMonth**

**Dimensions:**

- budget
- months:Leaf [payraisemonth]...
- payraisemonth

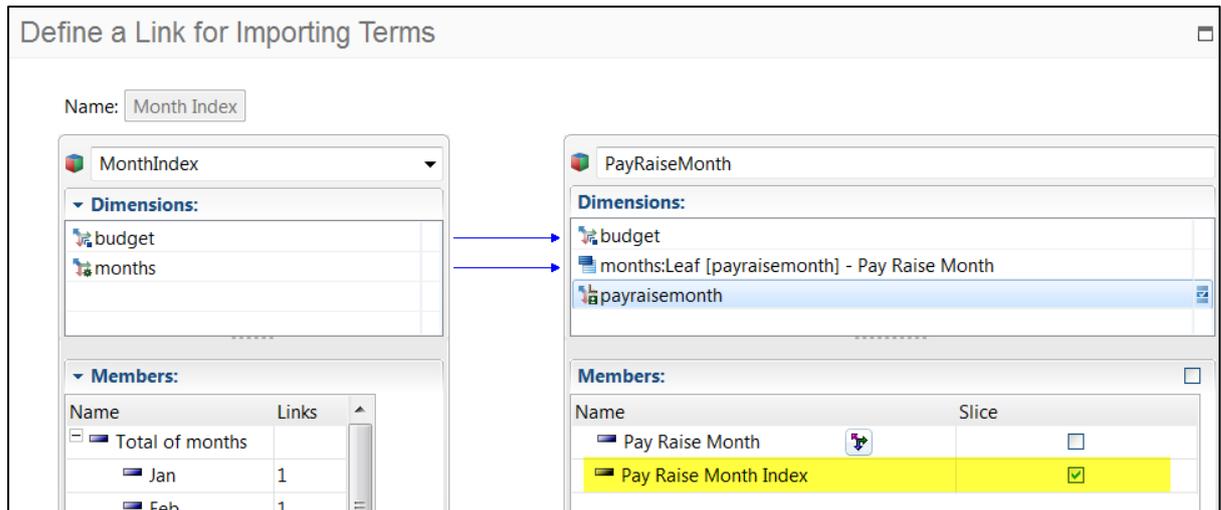
**Members:**

Name	Links
Total of months	
Jan	1
Feb	1
Mar	1
Apr	1
May	1
Jun	1
Jul	1
Aug	1

**Mappings**

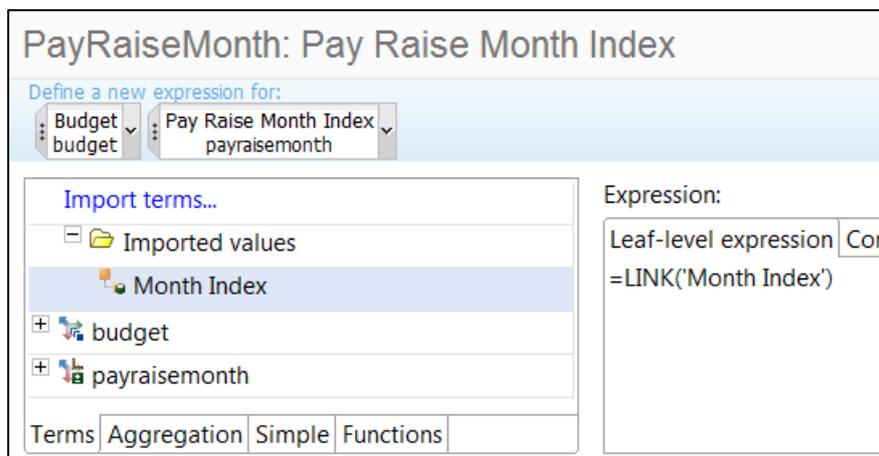
Mapped Source	Mapped Target
Jan	Jan
Feb	Feb
Mar	Mar
Apr	Apr
May	May
Jun	Jun
Jul	Jul
Aug	Aug
Sep	Sep
Oct	Oct
Nov	Nov
Dec	Dec

86. Then select the Pay Raise Month Index item from the payraisemonth dimension.



87. Select OK

88. Drag the Month Index import link into the Leaf level expression.



89. Select Ok and check the results.

Note: this does not always refresh straight away. Navigate to another employee and back to Dianne to see the expected results.

## IBM Cognos TM1 Enablement Program – Activity A08

salary														months	Dianne Dawkins	Facilities	Budget
	Total of months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
Opening Headcount	1	1	1	1	1	1	1	1	1	1	1	1	1				
Joiners	0	0	0	0	0	0	0	0	0	0	0	0	0				
Leavers	0	0	0	0	0	0	0	0	0	0	0	0	0				
Closing Headcount	1	1	1	1	1	1	1	1	1	1	1	1	1				
Grade	B	B	B	B	B	B	B	C	C	C	C	C	C				
Salary	62,250	5,000	5,000	5,000	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250	5,250				
Pension	4,208	300	300	300	315	315	315	394	394	394	394	394	394				
Other Benefits	2,910	200	200	200	210	210	210	263	263	289	289	289	289				
Employers Tax	6,540	500	500	500	525	525	525	578	578	578	578	578	578				
Employee Cost	75,908	6,000	6,000	6,000	6,300	6,300	6,300	6,484	6,484	6,510	6,510	6,510	6,510				
Employee Tax	7,785	600	600	600	630	630	630	683	683	683	683	683	683				
New Grade								C									
Last NZ New Grade								C	C	C	C	C	C				

This completes the A08\_Salary\_Planning activity.

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