



TBM CONFERENCE 2015

Charting the Course of Data Integrity

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Agenda

Use cases

- **Basic thought process of troubleshooting**
- **Why isn't my allocation doing what I want?**
 - Why isn't my allocation allocating ANY money
 - Why isn't my allocation allocating the expected money?
- **Where does a number in a report come from?**
- **But..... are my numbers actually right?**
 - Accuracy vs precision / false Insights and how to avoid them
 - Ensuring consistency in your monthly process
 - Simple sniff tests

Basic thought process of troubleshooting

- **Apptio is a rules engine**

- Understanding anything in Apptio can be broken down into 3 tasks: inputs, outputs, and the function in between

- **Outputs**

- When debugging, start with the number that you are questioning....
- Think about how you've defined it to find the function and the input(s) to it.

- **Function**

- Is the function doing what you want?

- **Inputs**

- Think about the number the output most directly depends on.
- Is the input reasonable?
- If not, repeat this process for the input.

Why isn't my allocation allocating any money?

■ Inputs

- Source object \$ amount

■ The function

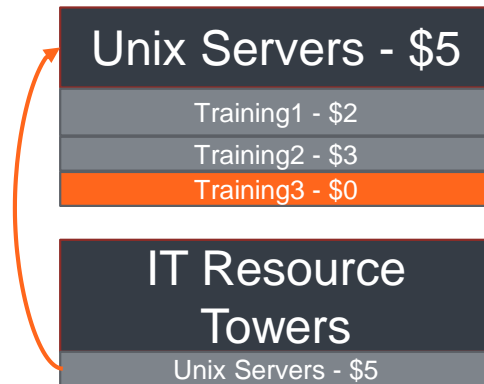
- Filters
- Weighting
- Inference link

■ Filters

- Does your allocation have filters?
- Do they match the data?
- Check both from some and to some filters!
- Remove them to be sure

Weighting

- Are you weighting by a column?
- Does it have non-numeric characters?
- Check that in the modeler the total row shows up
- Remove to be sure



Why isn't my allocation allocating any money?

Inference link... ignoring many to many

■ Find the non-various identifier

- In the source object, use show/hide columns to bring in the target object identifier
- In the destination object, use show/hide columns to bring in the source object identifier
- Autosearch for 'var' to find the one that lacks any '{Various}'

Server	Tower
Training1 - \$2	Unix Servers
Training2 - \$3	Unix Servers
Training3 - \$0	Unix Servers

Tower	hostname
Unix Servers	{Various}

■ If the non-various is in the target object

- Does it have values that in the source-object are non-zero?

■ One side is 'null' and the other side is various

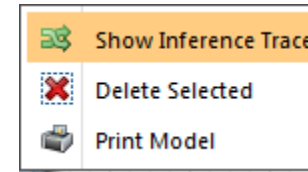
- Equally weighted inference path

The screenshot displays the Apptio interface. At the top, an inference map shows a 'Servers \$5' node connected to a 'Tower' node (represented by a server icon) with a '100%' label. Below this, a 'Summary Data' table is visible. The table has columns for 'IT Resource Towers.Tower', 'Servers.Server', 'Cost', 'Unassigned', and '% Assigned'. The data row shows 'Unix Servers' for the tower, '{Various}' for the server, a cost of '\$5', an unassigned amount of '\$0', and a percentage assigned of '100%'. To the right of the table, there is a sidebar with various options: 'Name: IT Resource Towers', 'Total Cost: \$5', 'Category: Click to set', 'Tasks', 'Drivers', 'View Report', 'View in Inference', 'View Line Items', and 'Configuration'.

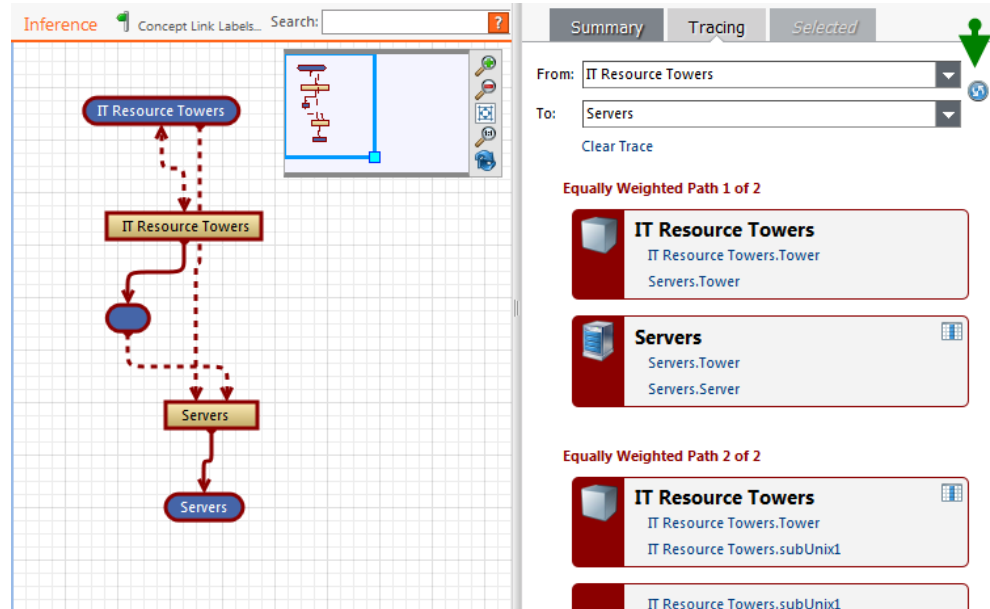
IT Resource Towers.Tower	Servers.Server	Cost	Unassigned	% Assigned
Unix Servers	{Various}	\$5	\$0	100%
Total		\$5	\$0	100%

Why isn't my allocation allocating any money? inference link... ignoring many to many

- One side is 'null' and the other side is various
 - Equally weighted inference path



Right-click
allocation line



Why isn't my allocation allocating any money?

Many to many

- A many to many can be removed
 - Make an intermediary model object
 - Use the inference key as your identifier.
 - Easier to debug
 - See the prior slides...

Summary Data

IT Resource Towers.Tower	Cost	Unassigned	% Assigned
Unix Servers	\$5	\$0	100%
Total	\$5	\$0	100%

Why isn't my allocation allocating the expected money?

- **The above steps all apply**

- Check that the filters, the weighting column, & the inference path is what you expect

- **Grouping can affect 'even' weighting**

- Even weighting weights by the system generated '.Count' column
- Starts as (1) but changes as tables group. It is the total number of rows that ultimately got grouped together since upload
- If you want truly even weighting:
 - Group your transform by the model object identifier
 - Make a numeric column with the formula '=1' that applies after grouping
 - Weight by this new numeric column.

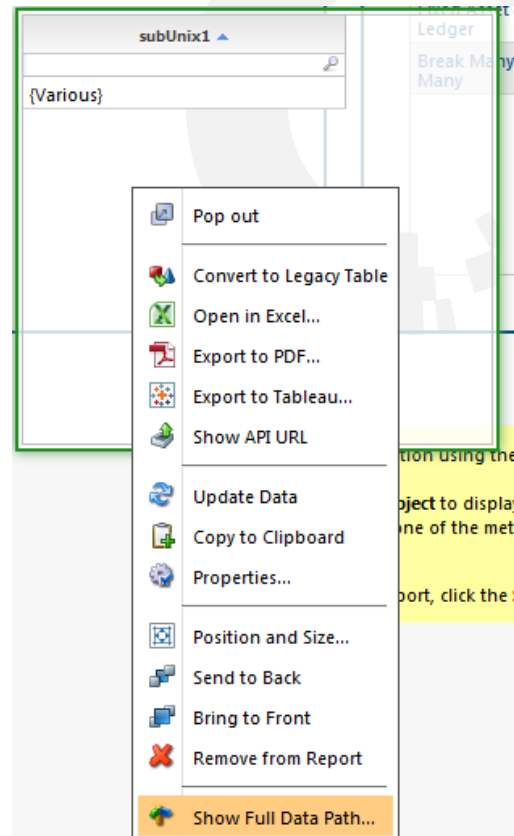
- **Is every value in the weighting column 0?**

- Weighting is not % allocation. Weighting across all 0s is an even spread.
- To never allocate across 0 values, you can use a 'To Filter'

Where does this report number come from

■ Edit data path shows you

- Two common formats, very different meanings:
- 1) Report off a single object. Number is the same as in the object
- 2) Traces between objects. Number is combining all numbers in between the 2 objects.
 - Never trace/cross object filter anything but modeled metrics
 - Data path will include '.Drillto' or '.Assignments'



Where does this report number come from tracing

- **Sometimes you want to trace an odd number**
 - Display both source and destination objects in the table
 - Find an interesting value
 - Move that column to 'filters' and apply a filter
 - Add an object locked-field on an object between the 2 to rows
 - Repeat until the 2 objects displayed are adjacent
 - Then you are looking at the allocation line between them....

Where does this report number come from tracing

The screenshot illustrates the data flow in Apptio. It starts with a summary table on the left, which is linked by an arrow to a more detailed table in the center. This detailed table is then linked by another arrow to the 'Ad Hoc Query Configuration' window on the right. Within this window, the 'Filters' section is expanded, showing a list of values to include, with 'Training3' selected. This selection is highlighted in the 'Edit Filter' dialog box in the foreground.

Summary Table:

Server	Cost
Training3	\$3
Training2	\$1
Training1	\$1
Total	\$5

Detailed Table:

Server	Asset ID	Cost
Training3	asset2	\$1
Training3	asset3	\$1
Training3	asset1	\$1
Training2	asset2	\$1
Training2	asset3	\$1
Training1	asset2	\$0
Training1	asset3	\$0
Training2	asset1	\$0
Training1	asset1	\$0
Total		\$5

Ad Hoc Query Configuration:

Choose from the following: Servers, Fixed Asset Ledger, IT Resource Towers

Drag fields into the areas below:

- Filters: Server
- Columns: (empty)
- Values: Cost

Edit Filter:

Choose the values to include:

Filter: (empty)

Select: All / None

- ☐ Training1
- ☐ Training2
- ☒ Training3
- ☐ (Values not currently shown)

Buttons: OK, Cancel

Agenda

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Accuracy vs precision

■ How Precise is Apptio

- Apptio does all math using the IEEE double precision floating point spec
- Our final precision is the lesser of:
 - Approximately 15 significant digits
 - Or 7 decimal places

■ How Accurate is Apptio

- Well.... it depends...
- At what granularity?
- How well-related is your data?
- Apptio is a very powerful engine for relating poorly related data, and increasing granularity beyond what actually exists in the data.
- Given perfect inference keys for the granularity you report at, Apptio will be perfectly accurate, but nobody ever has perfect data.

Data relatedness

The accuracy of your spend analysis is directly tied to how well-related your data is.

- **How many axes can you relate your data on?**
 - Supported IT Resource Tower
 - Location
 - Vendor/Manufacturer
 - Tower-specific axis such as operating system
- **The intersection of these determine accuracy, and relevance of granular data:**
 - Allocate from a 'bucket' of money
 - Allocate to a destination group of configuration items or assets
 - Accuracy is higher if you have a large number of small buckets, allocating across a comparable number of larger groups.
 - Apptio recommends keeping this intersection below 1 million rows
 - Higher values tend to mean you've loaded granular data that you cannot relate
 - If you can't relate around 'location', you shouldn't make decisions on this axis.
 - Remove granularity for axes on which you cannot relate.

Accuracy in allocation lines

- **How accurate is a from all to all allocation?**
 - Not very
- **How accurate is a data-based allocation?**
 - The larger the unique inference keys relative to model object identifiers, the better

	A	B	C	D
a	#			
b		#	#	
c	#			
d		#		
e				
f				#

=

Col1	Col2	Value
A	a	#
A	c	#
B	b	#
C	b	#
B	d	#
D	f	#

=

The screenshot displays the Apptio software interface. At the top, a diagram shows an 'IT Resource' box with a blue outline, connected by a green arrow labeled '\$5' and '100%' to a server icon below it. A red arrow points from the server icon to the 'Assignment Ratios' table below. The table has columns: 'IT Resource Towers.IT Resource Towers.Tower', 'Fixed Asset Ledger.Fixed Asset Ledger.Asset ID', 'Rollup Ratio', 'Rollup Percent', and 'Rollup Value'. The table contains three rows of data for 'Unix Servers'. On the right side of the interface, there are sections for 'Cost from Fixed A Towers', 'Tags: Click to set', 'Description: Enter a description for t. immediately.', 'Rules Based Allocatic', 'Allow Apptio to auton following specifier', 'From' (with radio buttons for 'All Fixed Asset Led', 'Some Fixed Asset Le', and 'Fixed Asset Ledger I'), and 'To' (with radio buttons for 'Data-based Referer For Fixed Asset Led Towers:', 'Do Not Allocate', and 'Tax Existing IT R'). At the bottom, there is a navigation bar with links: 'Home', 'About', 'Apptio Community', 'Data Advisor', 'Help', and 'Support'.

IT Resource Towers.IT Resource Towers.Tower	Fixed Asset Ledger.Fixed Asset Ledger.Asset ID	Rollup Ratio	Rollup Percent	Rollup Value
Unix Servers	asset1	1	100%	\$1
Unix Servers	asset2	1	100%	\$2
Unix Servers	asset3	1	100%	\$3

Accuracy: the AR Table

Sparse M:M

	A	B	C	D
a				
b				
c				
d				
e				
f				

6 Rows

VS

From All to All

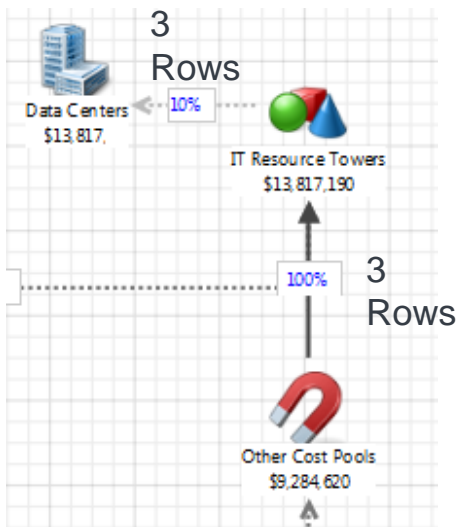
	A	B	C	D
a				
b				
c				
d				
e				
f				

24 Rows

- Takeaway: Improving the quality of your allocations will result in them driving more accurate insights

Accuracy: the AR Table

- Example: Consider these allocations. How accurate is the allocation?



To ITRT

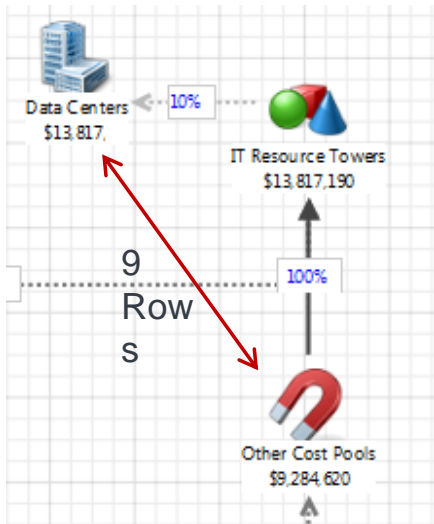
Cost Center	ITRT	\$
103326	Data Centers	1000
827093	Data Centers	500
390893	Data Centers	900

To Data Centers

ITRT	Data Center	\$
Data Centers	Yakima	800
<u>Data Centers</u>	<u>Tacoma</u>	<u>800</u>
Data Centers	Seattle	800

Accuracy: the AR Table

- Example: Answer = Not very.
- How can we improve this?



Cost Center	Data Center	\$
103326	Yakima	333.33
<u>103326</u>	<u>Tacoma</u>	<u>333.33</u>
103326	Seattle	333.33
827093	Yakima	166.66
<u>827093</u>	<u>Tacoma</u>	<u>166.66</u>
827093	Seattle	166.66
390893	Yakima	300
<u>390893</u>	<u>Tacoma</u>	<u>300</u>
390893	Seattle	300

Accuracy: the AR Table

- Example: Do we have more detail below ITRT?

The Other Costs Dataset

Cost Center	ITRT	Cost Center Description	\$
103326	Data Centers	Yakima	1000
<u>827093</u>	<u>Data Centers</u>	<u>Tacoma</u>	<u>500</u>
390893	Data Centers	Yakima	900

Expand ITRT

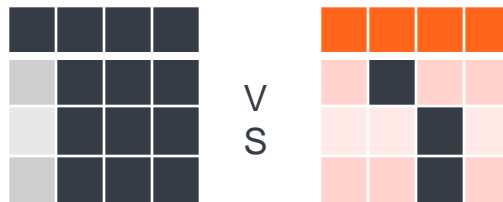
ITRT	ITRT Key	\$
Data Centers	Data Centers,Yakima	1900
<u>Data Centers</u>	<u> Data Centers,Tacoma </u>	<u>500</u>

Accuracy: the AR Table

- Example: Old Vs. New AR Table

Cost Center	Data Center	\$
103326	Yakima	333.33
<u>103326</u>	<u>Tacoma</u>	<u>333.33</u>
103326	Seattle	333.33
827093	Yakima	166.66
<u>827093</u>	<u>Tacoma</u>	<u>166.66</u>
827093	Seattle	166.66
390893	Yakima	300
<u>390893</u>	<u>Tacoma</u>	<u>300</u>
390893	Seattle	300

Cost Center	Data Center	\$
103326	Yakima	1000
<u>827093</u>	<u>Tacoma</u>	<u>500</u>
390893	Yakima	900



Accuracy

- **Seeing this table in Ad Hoc Query**
- Drag one identifier into rows, the other into 'columns', and the metric into 'Cost'

Cost Center	Yakima	Tacoma
827093		\$500
390893	\$900	
103326	\$1,000	

Cost Center	Seattle	Yakima	Tacoma
827093	\$166.6666667	\$166.6666667	\$166.6666667
390893	\$300	\$300	\$300
103326	\$333.3333333	\$333.3333333	\$333.3333333
Total	\$800	\$800	\$800

Ad Hoc Query Configuration

Drag fields into the areas below:

Filters

Columns
Location

Rows
Cost Center

Values
Cost

☒ Update Results Immediately

Ensuring consistency in your monthly process

■ Why

- Consistency ensures that trends in inaccurate numbers still lead to good decisions

■ How

- Do data cleanup in source systems
 - Tweaking data in Apptio means the same tweak is needed next month, and will be missed
- Build a quick validation report
 - Common Sniff Tests
 - Run this every month

■ Minimize versioning

- Transform/model versioning means different periods use different logic, and thus comparisons between them MIGHT be less valid.

Simple sniff tests

- **Service Costing's OOTB 'Data Quality Summary' report**
 - Is all my money allocating?
 - Configure Check Data Expiration
 - Has each data source been uploaded that should be?
- **Check inference keys and identifiers**
 - Check for blank or {various} values.
- **Check weighting columns**
 - Check for non-numeric values, and blanks [=if(Value(col)=col,"Yes","No")]
- **Some results are easy to validate**
 - Does Fixed+Variable=Cost?
- **Does all money make it**
 - Compare cost at top of model to cost at the bottom.



Want to know more?

▪ Local User Groups

- Deep dives on customer-requested topics
- Next one in Atlanta on November 11, 2015
- Contact your Apptio Account Manager

▪ Apptio Community

- Check for blank or {various} values.
- I'll post this PowerPoint next week
 - Search for 'Charting the Course of Data Integrity'
- TBMcouncil.jiveon.com/community/apptio



Thank you!

Please enjoy a 15 minute break.
Next session(s) begin at 9:30am.

Next in this room:

Introduction to IT Planning Foundation

