Cisco TelePresence Management Suite Analytics Extension

API Programming Reference Guide

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Contents

Introduction

This document describes the measures and dimensions of the Cisco TelePresence Management Suite Analytics Extension Data Warehouse CUBE. The combination of these measures and dimensions make the Cisco TelePresence Analytics Extension application programming interface (API).

The API can be accessed by any client that can connect to Microsoft SQL Server Analysis Services. Supported technologies include XML for Analysis, OLE DB for OLAP, and ADOMD /ADOMD.NET.

Five Excel sample workbooks are accessible via the Analytics Extension web interface. See the Cisco TMSAE Installation Guide for more information on installing these example spreadsheets. Each workbook covers one of the five *fact tables* described below, and the workbooks each have several worksheets that demonstrate different uses for the fact tables. If you are not familiar with data warehousing concepts and terminology, downloading and exploring the samples while reading this document is recommended.

Dimensions and Measures

The Cisco TMSAE data warehouse stores data in an *OLAP cube*, a specialized and standardized data structure that allows very fast analysis of large data sets.

An OLAP cube is made up of *Dimensions* and *Measures*. Dimensions have several *Attributes* and *Members.* Measures are numeric, and are derived from *Fact tables* in the database. The terms "fact" and "measure" are often used interchangeably.

The dimensions are derived from *Dimension tables* in the database. Facts and dimensions are part of a data model called a *star schema.* The star schema gets its name from a common visual representation – the fact table is in the center, while the dimension tables surround the fact table, giving the appearance of a star (Figure 1).
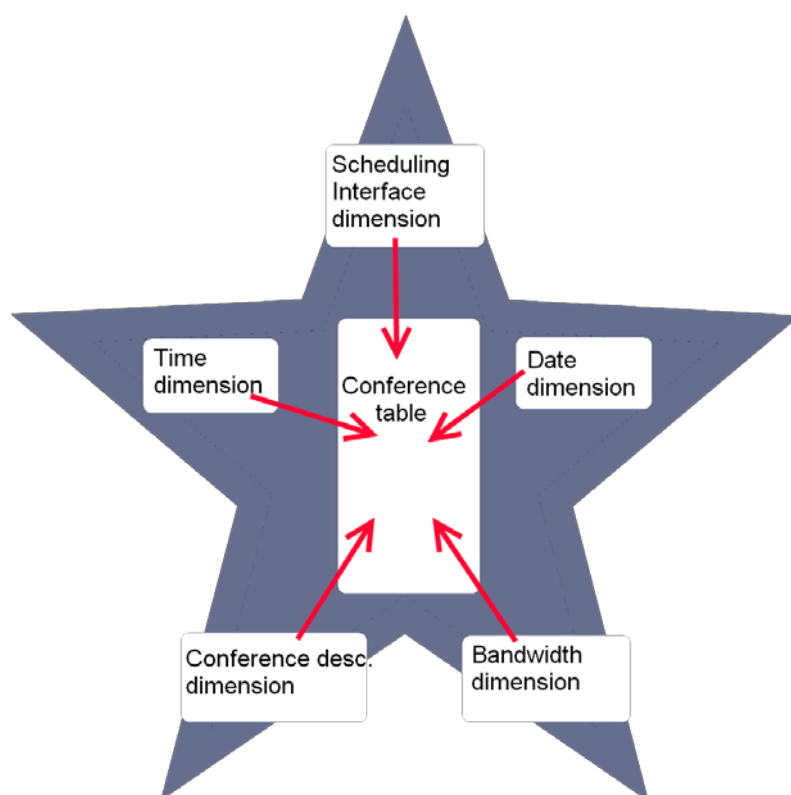

Figure 1: A star schema. The *Conference* table is in the center, surrounded by dimension tables. These dimensions can be used to break down the *Conference* table.

Each dimension is divided into several attributes. For example, the *System* dimension is broken down into attributes such as "System Name", "System Manufacturer", and "IP Address". Each attribute has several members.

	IP (H323)	ISDN (H320)	SIP	Unknown
Sun	17679	597	13286	11
Mon	179257	1416	99897	201
Tue	198380	1332	119425	207
Wed	209295	1643	115372	190
Thu	193905	1587	111051	307
Fri	178052	1521	98886	485
Sat	14778	568	9837	173

Figure 2: The *Day Shortname* attribute of the *Date* dimension and the *Protocol Name* attribute of the *Call Protocol* dimension applied on the *Call Count* measure

In Figure 2, the two dimensions *Date* and *Protocol Name* are used. These attributes are broken down in members: *Date* has seven members ("Sun", "Mon", "Tue", "Wed", "Thu", "Fri", and "Sat"), while *Protocol Name* has four members ("IP (H323)", "ISDN (H320)", "SIP", and "Unknown").

Only one measure is used, *Call Count*. As *Call Count* is used in conjunction with *Day Shortname* and *Protocol Name*, each cell shows the total number of calls placed on a particular weekday using a particular protocol. For example, since this particular TMS was set up in December 2008, there have been 209,295 H.323 calls made on Wednesdays.

The example is two-dimensional, using two dimensions and a single measure. Cubes are rarely two-dimensional, as they normally will have multiple measures and multiple dimensions. The Cisco TMS Analytics Extension CUBE has five measures and 13 dimensions. Such a cube is harder to visualize than the two-dimension, one measure example above, but is just as easy to use as in the example.

Within each dimension, there are predefined aggregations of levels of measures. These are called *hierarchies*. Hierarchies make analyzing multiple levels of attributes easier. For example, the *Date* dimension has members such as "Year", "Month Name", "Week number", and "Day Name". These members are available as a hierarchy for ease of use. See the example in Figure 3, where the *Peak Actual Video Calls* measure from *Fact MCU Load* is broken down by time.

	Peak Actual Video Calls
⊟ 2010	46
⊞ January	33
⊞ February	46
⊟ March	38
⊞ 10	19
⊞ 11	28
⊞ 12	36
⊟ 13	38
Sunday	5
Monday	1
Tuesday	1
Wednesday	1
Thursday	38
Friday	32
Saturday	1
⊞ 14	33
⊞ April	40
⊞ May	24
Grand Total	**46**

Figure 3: An example hierarchy, where the *Peak Actual Video Calls* measure is broken down on years, months, weeks, and days.

Further examples

A commonly requested report is a simple chart of the number of calls made at specific time intervals. This is easily achieved by taking the *Call count* measure from the fact *Call*, and combining it with the *Time* dimension. The *Time* dimension defines a hierarchy of granularities, so the user may plot the number of calls made per year, quarter, month, week, day, hour, minute, and even second. See Figure 4 for an example of a *Call count* broken down by the *1 Hour Interval* member.

Endpoints are usually organized into a folder structure, often matching the organization's department structure. By combining the *Folder* dimension with the *Call count* measure, it is easy

to see which departments that are using video the most (Figure 5). You can continue using the time dimension too, plotting each folders usage over time. The dimensions can also be filtered, allowing you for example to focus on a single folder, or a smaller time period.

Both these examples concern the *Call* fact. *Call* is the most versatile of the measures, and most dimensions are applicable to it. Note that not all dimensions can be used on all facts; see the dimension applicability matrix for an overview on this.

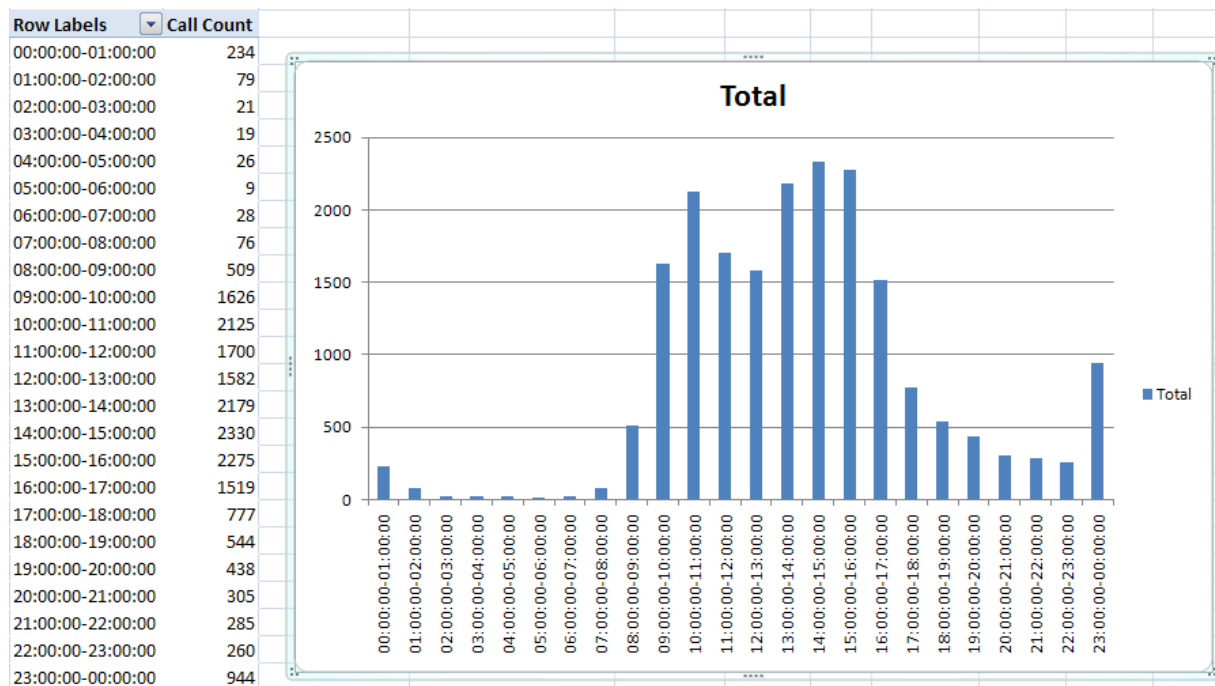| Row Labels	Call Count
00:00:00-01:00:00	234
01:00:00-02:00:00	79
02:00:00-03:00:00	21
03:00:00-04:00:00	19
04:00:00-05:00:00	26
05:00:00-06:00:00	9
06:00:00-07:00:00	28
07:00:00-08:00:00	76
08:00:00-09:00:00	509
09:00:00-10:00:00	1626
10:00:00-11:00:00	2125
11:00:00-12:00:00	1700
12:00:00-13:00:00	1582
13:00:00-14:00:00	2179
14:00:00-15:00:00	2330
15:00:00-16:00:00	2275
16:00:00-17:00:00	1519
17:00:00-18:00:00	777
18:00:00-19:00:00	544
19:00:00-20:00:00	438
20:00:00-21:00:00	305
21:00:00-22:00:00	285
22:00:00-23:00:00	260
23:00:00-00:00:00	944

Figure 4: In this example from a Cisco TelePresence R&D department, the *1 Hour Interval* member of the *Time* dimension is applied to the *Call count* measure. The chart shows that the afternoon was the most popular time for videoconferencing in this particular department.

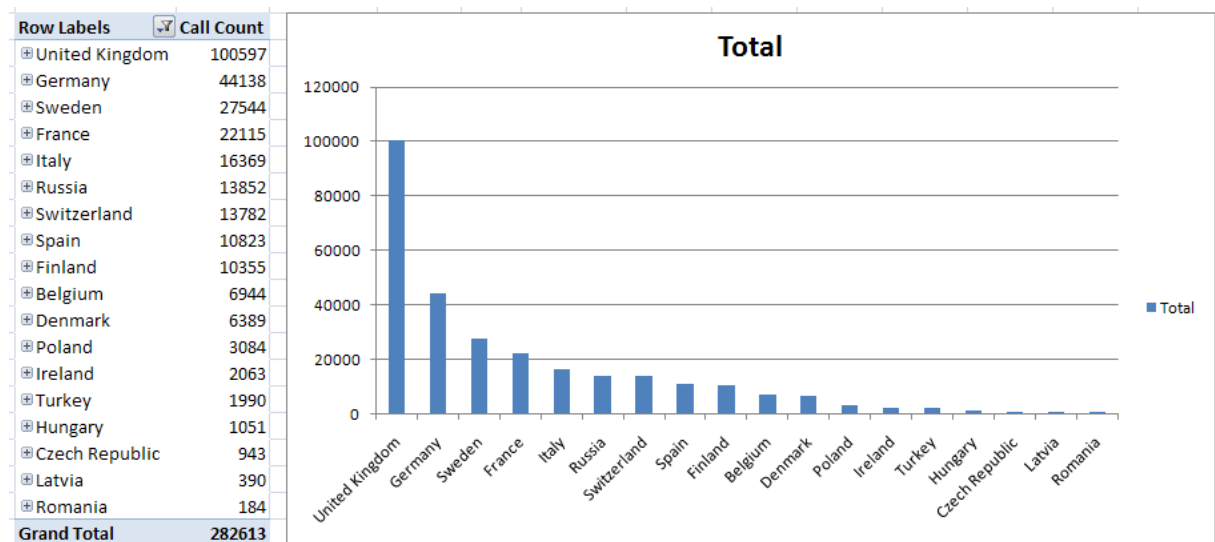| Row Labels	Call Count
⊞ United Kingdom	100597
⊞ Germany	44138
⊞ Sweden	27544
⊞ France	22115
⊞ Italy	16369
⊞ Russia	13852
⊞ Switzerland	13782
⊞ Spain	10823
⊞ Finland	10355
⊞ Belgium	6944
⊞ Denmark	6389
⊞ Poland	3084
⊞ Ireland	2063
⊞ Turkey	1990
⊞ Hungary	1051
⊞ Czech Republic	943
⊞ Latvia	390
⊞ Romania	184
Grand Total	**282613**

Figure 5: Calls broken down by departments. This example chart is created by applying the *Folder.Parent Folder Id* hierarchy on the *Call count* measure, and then drilling down to the parts of the hierarchy that concern Europe. The chart shows that in the European part of the organization, the UK department makes the highest number of calls, followed by Germany, Sweden, and France.

MDX

MDX is a language for querying an OLAP cube. MDX is similar to SQL, but has added support for the multidimensional nature of cubes. When using clients such as Microsoft Excel or Microsoft SQL

Server Management Studio to build reports, MDX is generated behind the scenes and sent to the Analysis Services database. Users may also write their own MDX queries to query the cube directly, but describing MDX in detail is beyond the scope of this reference guide.

Dimensions

The dimensions available in the Cisco TMSAE should be familiar to anyone who has worked with Cisco TMS. The dimensions generally map quite closely to the attributes managed in TMS.

Dimensions are often organized in hierarchies. For example, the *Date* dimension can be browsed as a hierarchy starting with *Year*, from which you can drill down to *Month*, and then to the days in the month. Each dimension can support multiple such hierarchies. For example, the *Date* dimension supports *Year > Month > Day of Month*, *Year > Quarter > Month > Day of Month*, *Year > Week > Day of Week*, and several others. Hierarchies are notoriously difficult to work with in SQL, and this is an area where MDX is particularly useful.

The following sections of this document describe the dimensions available in the Cisco TMS Analytics Extension CUBE. The attributes and hierarchies do for the most part have intuitive names, even though some of them need further explanation for users who do not have experience with TMS terminology.

Date and Time

There are two time dimensions available, *Date* and *Time*. The former represents the date, and the latter represents the time of day. *Date* and *Time* are two of the most useful dimensions available, and they are applicable to most available measures.

Available attributes (Date)

Name	Description	Example values
Date	Date	"2010-01-25 00:00:00" "2010-02-15 00:00:00"
Day in month	Day in month ("1"-"31"), positive integer	"11", "28"
Day in week	Day in week ("1"-"7"), positive integer. "1" is Sunday	"2", "6"
Day in year	Day in year ("1"-"366"); day "366" only applicable in leap years	"21", "56"
Day Name	The name of the day	"Sunday", "Wednesday"
Day Shortname	A shorthand version (three letters) of the day name	"Sun", "Wed"
Half year number	Half year. "1" is January-June, "2" is July-December	"1", "2"
Is Weekday	If a day is a weekday. Mondays to Fridays are "Yes", Saturdays and Sundays are "No"	"Yes", "No"
Month Name	Name of the month, "January" to "December"	"March", "August"
Month number	Number of the month. January is "1", "December" is "12"	"3", "8"
Month Shortname	A shorthand version (three letters) of the month name	"Jan", "Mar", Apr"

Name	Description	Example values
Quarter number	Quarter year. "1" is January to March, "2" is April to June and so on.	"2", "4"
Week number	Week numbers, U.S. calendar years. ("1"-"54")*	"5", "34"
Year	All years between 2000 and 2019	"2001", "2012"

Note: Some years actually have 54 weeks. In the United States and other countries where Sunday is regarded as the first day of the week, this applies at 28-year intervals, for any year containing a Tuesday February 29th. Cisco TMSAE uses Sunday as the first day of the week, *not* Monday as in the ISO 8601 standard.

Available hierarchies (Date)

Name	Description	Example values
Hierarchy	Year > Month Name > Week number > Day Name	"2009" > "March" > "12" > "Sunday" "2010" > "January" > "5" > "Friday"
Year - Week number - Date	Year > Week number > Date	"2009" > "12" > "2009-03-15 00:00:00" "2010" > "3" > "2010-01-11 00:00:00"
Year - Half year - Quarter - Month - Day	Year > Half year number > Quarter number > Month Name > Day in month	"2010" > "1" > "2" > "April" > "7" "2009" > "2" > "4" > "November" > "3"
Year - Month - Day	Year > Month Name > Day in month	"2010" > "March" > "10" "2009" > "September" > "9"
Year - Quarter - Month - Day	Year > Quarter number > Month Name > Day in month	"2009" > "3" > "September" > "8" "2010" > "1" > "February" > "18"
Year - Quarter - Week - Day	Year > Quarter number > Week number > Day Name	"2009" > "2" > "14" > "Tuesday" "2010" > "2" > "16" > "Monday"
Year - Week - Day	Year > Week number > Day Name	"2009" > "15" > "Saturday" "2010" > "13" > ""Thursday"

Available attributes (Time)

Name	Description	Example values
1 Hour Interval	One hour intervals	"00:00 - 01:00", "19:00 - 20:00"
10 Minute Interval	Ten minute intervals	"01:00 - 01:10", "16:30 - 16:40"

Name	Description	Example values
3 Hour Interval	Three hour intervals	"06:00 - 09:00", "15:00 - 18:00"
30 Minute Interval	Thirty minute intervals	"02:30 - 03:00", "05:00 - 05:30"
5 Minute Interval	Five minute intervals	"00:55 - 01:00", "02:20 - 02:25"
6 Hour Interval	Six hour intervals	"00:00-06:00", "06:00-12:00"
Hour	One hour intervals, 0-23	"1", "5"
Minute	One minute intervals, 0-59	"7", "45"
Minute In Day	One minute intervals, 0-1439	"847", "1043"
Second	One seconds intervals, 0-59	"7", "45"
Second In Day	One second intervals, 0-86384	"4440", "86220"
Time	Timetamp	"2008-01-05 00:06:00" "2010-02-02 00:32:00"

Available hierarchies (Time)

Name	Description	Example values
Hour - Minute - Second	Hour > Minute > Second	"4" > "2" > "0" "23" > "51" > "0"
Intervals	6 hour interval > 3 hour interval > 1 hour interval > 30 minute interval > 10 minute interval > 5 minute interval	"12:00:00-18:00:00" > "12:00:00-15:00:00" > "13:00:00-14:00:00" > "13:30:00-14:00:00" > "13:50:00-14:00:00" > "13:50:00-13:55:00"

System

The *System* dimension holds information about the video systems that TMS knows about. It contains information such as the IP, Name, Serial number, Folder, and much more. Video systems include all the systems one can see in the TMS Navigator, including both infrastructure products and endpoints.

Available attributes (System)

Name	Description	Example values
Added Timestamp	When the system was added to TMS	"2004-09-06 10:37:41.737000000", "2010-04-08 09:59:42.567000000"
Community Name	SNMP community name	"public", "video_endpoint"
Folder Id	The TMS folder id	"19", "13"
Host name	The host name of the system	"mcu1.example.com", "indiaVCS1.example.com"
IP Address	The IP address of the system	"10.33.11.7", "192.168.0.178"

Name	Description	Example values
IP Zone	Which IP zone the system belongs to. Used by TMS to allocate MCU capacity, route calls etc.	"France", "Singapore"
IP Zone Max IP Bandwidth	The maximum bandwidth associated with the IP zone above	"10000"
IP Zone Max Number of Calls	The maximum number of calls associated with the IP zone above	"1000"
IP Zone URI Domain Name	The domain name TMS uses for routing H.323 calls when doing URI dialing	"example.com"
Key folder	(for internal use only)	
Last Updated	The date of the last software update	"2010-01-05 21:48:48.607000000", "2009-02-19 07:00:03.843000000"
Max Audio Calls	The combined maximum number of Audio-only IP+ISDN MCU ports, MultiSite audio sites capability etc.	"1", "20"
Max IP Audio	The maximum number of Audio-only IP MCU ports, MultiSite audio sites capability etc.	"1", "20"
Max IP Bitrate	The maximum bandwidth for IP calls	"512", "6000"
Max Video Calls	Number of MCU ports, MultiSite capability etc.	"1", "80"
Serial number	The serial number of a system	"13A20107", "A1AA02A00064"
Software version	The software the system is running	"F7.4 PAL", "TV2.1.1.200231"
Specific System Type	The specific model of the system	"Cisco TelePresence 1000MXP", "Cisco TelePresence 1700MXP"
System Category	What type of system or device it is	"Gatekeeper", "Endpoint"
System Identifier Type	How TMS keeps track of the system	"IP Address", "MAC Address"
System Manufacturer	The manufacturer of the system	"Cisco TelePresence", "Polycom"
System Type	A broad class of systems that the specific system belongs to	"Cisco TelePresence C-series Endpoint", "Cisco TelePresence MCU", "Cisco TelePresence MXP Endpoint"
System Name	The system same in TMS	"Amsterdam T3", "peter.jones.office"
Time Zone	The time zone the system is set to	"(GMT + 03:00) Moscow, St. Petersburg, Volgograd", "(GMT)

Name	Description	Example values
		Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London"
Time Zone GMT Offset	Same as the above, but only the offset	"+ 03:00", "+ 00:00"
Time Zone Sort Order	A sort order associated with a time zone, as a non-negative real number	"3.0", "9.0"

Available hierarchies (System)

Name	Description	Example values
Category - Type	Category > Type > *Specific System Type* > Name	"Gateway" > "Cisco TelePresence IP Gateway" > "Cisco TelePresence IP GW 3510" > "IPGW Bangalore" "Endpoint" > "Cisco TelePresence Classic Endpoint" > "Cisco TelePresence 6000" > "alice.jones.6000"
Manufacturer - Category - Type	Manufacturer > Category > Type > *Specific System Type* > Name	"Cisco TelePresence" > "Gateway" > "Cisco TelePresence IP Gateway" > "Cisco TelePresence IP GW 3510" > "IPGW Bangalore" "Cisco TelePresence" > "Endpoint" > "Cisco TelePresence Classic Endpoint" > "Cisco TelePresence 6000" > "alice.jones.6000"
Manufacturer - Type	Manufacturer > Type > *Specific System Type* > Name	"Cisco TelePresence" > "Cisco TelePresence Content Server" > "Cisco TelePresence Content Server" > "tcs1.example.com" "Cisco TelePresence" > "Cisco TelePresence C-series Endpoint" > "Cisco TelePresence EX90" > "bob.smith.EX90"

Italics: (Available in version 1.1 release)

Persistent System

The Persistent System dimension is a variant of the System dimension. Persistent System will always associate call date with updated system information. For example, if a system named "Monster Park" changed its name to "Candlestick Park" at August 1, 2008, the Persistent System dimension will associate all calls both before and after this date with the "Candlestick Park" name. The System dimension, on the other hand, will treat "Monster Park" and "Candlestick Park" as two differently named systems.

The Persistent System dimension was added in version 1.1.

The Persistent System dimension has the exact same attributes and hierarchies as the System dimension.

Dial Number

This dimension concerns the domains and numbers that have been dialed.

Available attributes (Dial Number)

Name	Description	Example values
Domain	The domains that have been dialed	"example.com", "example.net", "[Unknown Domain]"
Number	The numbers that have been dialed	"5701", "7@example.com", "sunil.singh@example.net"

Available hierarchies (Dial Number)

Name	Description	Example values
Domain - Number	A hierarchical view of domains and numbers	"example.com" > "peter.smith@example.com"

Folder

This is the TMS Navigator folder structure. It is intended to be used as a hierarchic dimension, with the folder name as the only available attribute.

"Folder Id" and "Key Parent Folder" are used as intermediates when calculating the hierarchy, and will probably not be useful on their own.

Available attributes (Folder)

Name	Description	Example values
Folder Id	The internal ID of the folders of TMS' *Systems > Navigator* structure	"130", "24"
Key Parent Folder	(for internal use only)	

Available hierarchies (Folder)

Name	Description	Example values
Parent Folder Id	A hierarchical view of TMS' Systems > Navigator structure	"Europe" > "Germany" > "Hamburg"

Encryption Mode

This dimension only has one attribute, "Encryption Mode".

Available member (Encryption Mode)

Name	Description	Example values
Encryption Mode	Name of the encryption mode	"AES128", "Negotiate"

Bandwidth

This dimension has two members, relating to the bandwidth used. The two members are closely related, but there are some cases where they differ.

Available attributes (Bandwidth)

Name	Description	Example values
Bandwidth Name	Descriptive name for the bandwidth	"1920 kbps", "3G"
Bitrate	The bitrate that the bandwidth uses. For the most part the bitrate is obvious from the bandwidth name, but in some few cases, this does not apply (for example for "3G" and "1xh221").	"128", "6144"

Conference Description

This is a dimension with a few attributes pertaining to conferences only.

Available attributes (Conference Description)

Name	Description	Example values
Bridging method	How the conference was connected; for example whether it was a point to point conference or an internal or external MCU was used.	"External MCU", "Internal MCU cascaded", "Multiway"
Encrypted	A flag indicating whether the conference was encrypted or not	"If Possible", "No", "Yes"
Reservation Type	Classification of the booking. Will be mostly "AdHoc", in many installations	"Booking", "RoutedAdHoc", "Manual Call Launch"

Scheduling Interface

This dimension relates to how the conference was created. For example, this can be through the Cisco TMS-Exchange integration component, using TMS booking, or through other means.

Available attributes (Scheduling Interface)

Name	Description	Example values
Key Scheduling Interface	(for internal use only)	
Name	Name of the scheduling interface	"Cisco TelePresence Instant Messaging Integration", "TANDBERG_SCHEDULER", "TMS"
Type	Classification of the scheduling interface. The difference from the *Name* attribute is that all Exchange servers are grouped together in *Type*.	"Cisco TelePresence Instant Messaging Integration", "TANDBERG_SCHEDULER", "TMS"

VCS

This dimension describes the Cisco VCSs of the installation.

Available attributes (VCS)

Name	Description	Example values
Cluster Name	The name of a cluster of VCSs	"vcspool.example.com"
Is Cluster Master	Whether a VCS is a cluster master	"True", "False"
Is deleted	Whether a VCS is deleted from TMS	"True", "False"
Key VCS	Internal VCS identifier in TMS	"1", "2"
Name	The name of the VCS	"vcs1.example.net", "vcs2.example.net"

Available hierarchies (VCS)

Name	Description	Example values
Cluster - VCS	A hierarchical view of clusters and VCSs	"CHICAGO" > "CHICAGOvcs1"

VCS Cluster

This dimension has only one attribute, relating a VCS cluster name. As of Analytics Extension version 1.1, it is redundant to the VCS dimension.

Available attributes (VCS Cluster)

Name	Description	Example values
Name	A cluster of VCSs	"FrankfurtPool.company.com", "CHICAGO"

User

The *user* dimension applies to installations using the TMS Agent provisioning model. When provisioning is used, information about the users involved in calls are available in the Cisco TMS Analytics Extension. The Provisioning Directory groups and users will be available as the "User" and "User Group" dimension. The attributes are the same as in the Provisioning Directory.

Figure 6: From the Cisco TMS Provisioning Directory. Notice how the fields in TMS can be found as attributes in the *User* dimension in the Cisco TMS Analytics Extension.

Available attributes (User)

Name	Description	Example values
Company	The company of the user	"Example & Sons"
Department	The department of the user	"Marketing", "R&D Florida", "Reverse Logistics"
Display Name	The name the user is displayed as in TMS	"Thomas Smith", "Bobby Thatcher"
Email Address	The email address of the user	"peter.jones@example.com", "alice.smith@example.com"

Name	Description	Example values
FindMe	FindMe URI – as controlled by the URI pattern in TMS' provisioning directory	"peter.jones@example.com", "alice.smith@example.com"
Key User	(for internal use only)	
Key User Group	(for internal use only)	
Mobile Phone	The mobile (cell) phone number of the user	"+61 345654654"
Office Phone	The office phone number of the user	"+45 547689235"
Title	The title of the user	"Vice President", "Logistics Manager"
Username	The username	"peter.jones", "alice.fletcher"

Available hierarchies (User)

Name	Description	Example values
Company - Department - Name	The company, department and name. Corresponds to the text fields 'Company', 'Department', and 'Name' in the User Directory.	"ACME" > "UK Sales" > "Alexander Neville", "ACME" > "R&D India" > "Sunil Khan"

User group

Similar to the User dimension above, but applied to User groups .

Available attributes (User group)

Name	Description	Example values
Key User Group	(for internal use only)	
Name	Name as in TMS' Provisioning Directory	"R&D India", "Sales Canada"

Available hierarchies (User group)

Name	Description	Example values
Key User Group Parent	Level 02 > "Level 03" > Level 04	"R&D India" > "Uttar Pradesh" > "Noida"

Cause

Available attributes (Cause)

Name	Description	Example values

Name	Description	Example values
Cause Code	The numeric cause code, e.g. 200 for a SIP call disconnected normally	"200", "480"
Cause Description	A descriptive text version of the cause, this is usually easier to work with for people.	"Success", "Temporarily not available"
Cause	A combination of "Cause Code" and "Cause Description"	"200 Success", "480 Temporarily not available"
Cause Marks Success	A flag indicating whether the cause marks a successful disconnect or not, useful if you want to filter out unsuccessful calls.	"True", "False"
Protocol	The cause code protocol.	"SIP", "IP/ISDN"

Call Type

Available attributes (Call Type)

Name	Description	Example values
Call Type	Type of call, such as Traversal, NonTraversal, Streaming.	"NonTraversal", "Traversal"

Call Protocol

Available attributes (Call Protocol)

Name	Description	Example values
Protocol Name	Name of the protocol.	"ISDN (H320)", "SIP", "IP (H323)"

Duration Brackets

This bracket dimension consists of ten predefined time intervals. It can be used to group calls and conferences by their durations.

Available attributes (Duration Brackets)

Name	Description	Example values
Description	Textual description of the intervals	"0 seconds", "1-5 minutes", "5-10 minutes", "More than 4 hours"
Key Duration Brackets	Integer associated with the intervals, where 0 is "0 seconds", 1 is "1-30 seconds", 2 is "31-60 seconds" and so on.	"0", "1", "2"

Actual System Count Brackets

This bracket dimension consists of ten predefined time intervals. It can be used to group conferences by their number of (actual) participants.

The Actual System Count Brackets dimension was added in version 1.1.

Available attributes (Actual System Count Brackets)

Name	Description	Example values
Description	Textual description of the intervals	"No participants", "4 participants", "11-20 participants"
Key Participant Count Bracket	Integer associated with the intervals, where 0 is "No participants", 1 is "1 participant" and so on.	"0", "1", "2"

Measures

The following sections describe the measures defined by Cisco TMS Analytics Extension.

Note that several of the measures made available are meant for internal use only. These measures are used by Cisco TMSAE as intermediate numbers when making other calculations; for example is "Non Zero Actual Duration" used behind the scenes when "Peak Actual Video Utilization" is calculated.

The measures meant for internal use are included in the tables below for the sake of completeness, but have the description "(for internal use only)". The measures meant for internal use will most likely change in later versions of the Analytics Extension, and you are recommended not to use them when building custom applications based upon the Analytics Extension API.

Fact Call

Fact Call contains processed Call Detail Records (CDRs). CDRs are data about all point-to-point calls made between two systems.

It is important to understand the relationship between the *Fact Conference* and *Fact Call*. A conference can be viewed as a collection of multiple point-to-point calls, so a conference with three participants dialing into an MCU creates three CDRs, one for each system-to-MCU connection. This creates three points of data in *Fact Call*, but only one point of data in *Fact Conference*. In many installations the majority of conferences are created in an ad-hoc fashion, unscheduled meetings. In such installations *Fact Conference* contains a mix of scheduled and ad-hoc conferences. You can use the *Conference Description* dimension to filter out the ad-hoc conferences.

Calls are recorded as going from one system to another and contain information about both the source and the destination call endpoints.

Applicable Dimensions

- Date
- Time
- Bandwidth (Source and Destination)
- Call Protocol (Source and Destination)
- Call Type (Source and Destination)
- Cause (Source and Destination)
- *Dial Number (Source and Destination)*
- Duration Brackets

- Encryption Mode (Source and Destination)
- Folder (Source and Destination)
- *Persistent System (Source and Destination)*
- System (Source and Destination)
- User (Source and Destination)
- User Group (Source and Destination)
- *VCS (Source and Destination)*
- VCS Cluster (Source and Destination)

Dimensions in italics were added in version 1.1.

Except for the Date and Time dimensions, all the dimensions are available for both the source and destination of the call. By default, dimension names refer to the source and the destination is prefixed with "Destination", as in Destination System.

Applying the *System* dimension to *Fact Call* gives you data based on the *source* system of the call, whereas using the *Destination System* dimension gives you data based on the *destination* system of the call.

Available measures (Call)

Name	Available Units	Description

Name	Available Units	Description
Average Call Duration	Days, hours, minutes, seconds	Average duration of the calls (does not include zero-duration calls or unsuccessful calls)
Bandwidth used	Bits, kilobits, megabits, gigabits.	Total bandwidth used by the calls
Call count	Count	Number of calls
Call Duration	Days, hours, minutes, seconds	Duration of the calls

Fact Conference

Fact Conference contains information about conferences, both scheduled and ad-hoc.

If TMS is configured to do ad-hoc discovery, this will also contain a lot of point-to-point calls, not just scheduled conferences. See also the Fact Call section.

Most measures exist in both "actual" and "scheduled" versions. For example, there is both an "Actual Conference Duration" attribute and a "Scheduled Conference Duration" attribute.

Applicable Dimensions

- Duration Brackets
- Actual System Count Brackets (added in version 1.1)
- Bandwidth
- Conference Description
- Encryption Mode
- Key Actual End Date
- Key Actual End Time
- Key Booking Created Date
- Key Booking Created Time
- Key Scheduled End Date
- Key Scheduled End Time
- Key Scheduled Start Date
- Key Scheduled Start Time
- Scheduling Interface

Available measures (Conference)

Name	Available Units	Description
Actual Conference Duration	Days, hours, minutes, seconds	The actual duration of the conferences.
Actual System Count	Count	The aggregate number of actual systems in conferences (added in version 1.1.
Average Actual Conference Duration	Days, hours, minutes, seconds	The average actual duration of conferences.
Average Conference Participant Count	Count	The average actual number of participants.

Name	Available Units	Description
Average Scheduled Conference Duration	Days, hours, minutes, seconds	The average scheduled conference duration
Conference Count	Count	The count of all conferences
Conferences With Error Count	Count	The count of conferences with errors, for example participants that the MCU was unable to connect to
Conferences With Participants Count	Count	The count of conferences with a non-zero number of participants
Non Zero Actual Duration		(for internal use only)
Non Zero Scheduled Duration		(for internal use only)
Scheduled Conference Duration	Days, hours, minutes, seconds	The scheduled duration of conferences

Fact Call Load

Call Load contains information about the number of concurrent calls. The only applicable dimensions are *Time* and *Date*. Note that the measures are peaks, meaning that if you look at the concurrent call count for a single day, you get the highest number seen during that day. As the resolution of the data is minutes, you can use the date and time dimension together to find exactly what minute of the day the peak was seen.

Applicable Dimensions

- Date
- Time

Available measures (Call Load)

Name	Available Units	Description
Peak Call Rate	Bits/s	The maximum concurrent bitrate used by all the active calls.
Peak Concurrent Calls	Count	The maximum number of concurrent calls.

System

System is available both as a fact and a dimension. As a fact it offers a single measurement, the "System Count", which can be used together with the *System* dimension to count how many systems from each Manufacturer you have or the number of MCUs, Endpoints or Gatekeepers.

Applicable Dimensions

- Folder
- System

Available measures (System)

Name	Available Units	Description
System Count	Count	The number of systems in TMS

Fact MCU Utilization

Fact MCU Utilization contains information about the MCU usage in the installation.

Note that many of the measures are peaks. For example, the *Peak Audio Port Utilization* at a given date will show the highest percentage of audio utilization on a given date. The combined *Date And Time* dimension can be used to find at exactly what minute of the day the peak was seen, as the resolution of the data is minutes.

Fact MCU Utilization was added in version 1.1 to replace the *Fact MCU Load* measures. Note that *Fact MCU Load* is no longer available, and all applications relying on these measures should be updated to use *Fact MCU Utilization* instead.

Applicable Dimensions

- Date
- System
- Time

Available measures (MCU Utilization)

Name	Available Units	Description
Audio Bitrate Utilization		The relative usage of the available audio bitrate (Peak Audio Bitrate Usage / Available MCU Bitrate)
Available MCU Audio Ports	Port count	The number of available audio ports
Available MCU Bitrate	Bits	The available MCU bitrate
Available MCU Video Ports	Port count	The number of available video ports
Peak Actual Used Audio Ports	Port count	The peak number of used audio ports
Peak Actual Used Video Ports	Port count	The peak number of used video ports
Peak Audio Bitrate Usage	Bits	The peak bitrate used for audio calls
Peak Audio Port Utilization		The peak relative usage of video ports (Peak Actual Used Audio Ports / Available MCU Video Ports)
Peak Video Bitrate Usage	Bits	The peak bitrate used for video calls

Name	Available Units	Description
Peak Video Port Utilization		The peak relative usage of video ports (Peak Actual Used Video Ports / Available MCU Video Ports)
Video Bitrate Utilization		The relative usage of the available video bitrate (Peak Video Bitrate Usage / Available MCU Bitrate)

Dimension Applicability Matrix

	Call	Conference	Call Load	MCU Utilization	System
Date	X	X	X	X	
Time	X	X	X	X	
System (source and destination)	X				
System				X	X
Persistent System (source and destination)	*X*				
Bandwidth (source and destination)	X				
Bandwidth		X			
Call Protocol (source and destination)	X				
Call Type (source and destination)	X				
Cause (source and destination)	X				
Dial Number (source and destination)	*X*				
Duration Brackets	*X*	*X*			
Encryption Mode (source and destination)	X				
Folder	X				X
Folder (destination)	X				
Conference Description		X			
Scheduling Interface		X			
Actual System Count Brackets		*X*			
VCS (source and destination)	*X*				
VCS Cluster (source and destination)	X				
User (source and destination)	X				
User Group (source and destination)	X				

Italics: (Available in version 1.1 release)

Note: Rows mentioning "(source and destination)" actually refer to two separate measures. For example, "Call Protocol (source and destination)" refers to the two different measures "Source Call Protocol" and "Destination Call Protocol". Such measures are grouped together for the sake of clarity.

Bibliography

The following table lists documents and websites referenced in this document.

Titel	Reference	Link
Cisco TelePresence Management Suite Analytics Extension Administrator Guide	D14668	http://cisco.com
Cisco TelePresence Management Suite Analytics Extension Installation Guide	D14657	http://cisco.com