Exinda How To Guide: SQL Access





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Using this guide

Before using this guide, become familiar with the Exinda documentation system.

- "Exinda documentation conventions" on page 2
- "Notes, Tips, Examples, and Cautions" on page 3

Exinda documentation conventions

The Exinda documentation uses the following conventions in the documentation.

Graphical interface conventions

The following is a summary of the conventions used for graphic interfaces such as those in the Exinda Web UI and the Central Management Technical Preview UI.

Convention	Definition	
bold	Interface element such as buttons or menus.	
	For example: Select the Enable checkbox.	
Italics	Reference to other documents.	
	For example: Refer to the Exinda Application List.	
>	Separates navigation elements.	
	For example: Select File > Save.	

Command line conventions

The following is a summary of the syntax used for the CLI commands.

```
(config) # command <user input> keyword {list|of|options|to|select|from} [optional
parameter]
```

Convention	Definition	
monospace text	Command line text or file names	
<courier italics=""></courier>	Arguments for which you use values appropriate to your environment.	
courier bold	Commands and keywords that you enter exactly as shown.	
[x]	Enclose an optional keyword or argument.	
{x}	Enclose a required element, such as a keyword or argument.	
1	Separates choices within an optional or required element.	
[x {y z}]	Braces and vertical lines (pipes) within square brackets indicate a required choice within an optional element.	
command with many parameters that wrap onto two lines in the documentation	Underlined CLI commands may wrap on the page, but should be entered as a single line.	

Notes, Tips, Examples, and Cautions

Throughout the manual the following text styles are used to highlight important points:

• Notes include useful features, important issues. They are identified by a light blue background.

Note Note text

• **Tips** include hints and shortcuts. They are identified by a light blue box.

Tip Tip text

• **Examples** are presented throughout the manual for deeper understanding of specific concepts. Examples are identified by a light gray background.



Text

 Cautions and warnings that can cause damage to the device are included when necessary, and are highlighted in yellow.

Caution Caution text

Table of Contents

Chapter 1: Configure SQL Access	5
Download the ODBC Driver	5
Set Remote SQL Options	5
Create ODBC Data Source on Windows XP	6
Create ODBC Data Source on Windows 7	9
View SQL Access data in Microsoft Excel	14
Chapter 2: SQL Schema	17
flows Table	17
flows Tableapp_ids_and_names Table	17 20
flows Table app_ids_and_names Table urls Table	17 20 20
flows Table app_ids_and_names Table urls Table summary_applications Table	



Chapter 1: Configure SQL Access

The SQL Access feature on an Exinda appliance provides access to the traffic monitoring database from any ODBC compliant application.

In order to use this feature, SQL access needs to be configured on the Exinda appliance, and an ODBC driver needs to be installed and configured on a client. ODBC aware applications running on the client will then be able to query the Exinda appliance's internal monitoring database.

This How to Guide explains how to configure the Exinda appliance to accept remote SQL connections, as well as setting up the ODBC driver on Windows XP and Windows Vista/7 clients.

Download the ODBC Driver

Download the ODBC driver version that corresponds to your client operating system. Follow the instructions on this site for installing the ODBC driver on your client operating system.

The ODBC driver can be downloaded from:

http://dev.mysql.com/downloads/connector/odbc/

Set Remote SQL Options

In order to allow the Exinda appliance to accept remote SQL connections from an external ODBC connector, you must configure the following settings.

On the Exinda appliance, using the Web User Interface, navigate to System | Setup | SQL Access. You will be presented with the following form.

Remote SQL Options			
Remote SQL	Enable		
Allow access from (Hostname or IP)	(% = 'any')		
Username			
Password			
Confirm Password			

Apply Changes

Remote SQL	Select this option to allow the Exinda appliance to accept remote SQL connections
------------	---

	from external ODBC connectors.	
Allow access from (Hostname or IP)	Use this option to restrict the hosts that can connect to the SQL database. Specify '%' to allow any hosts to connect or enter an IP address or Hostname of a specify host to restrict access.	
Username	Specify a username to use for authentication (E.g. 'database').	
Password	Specify a password to use for authentication.	
Confirm Password	Retype the password specified above.	

Apply the changes. The SQL access will be made available immediately. A successfully configured appliance would look something like:

Remote SQL Options			
Remote SQL	Enable		
Allow access from (Hostname or IP)	% (% = 'any')		
Username	database		
Password	•••••		
Confirm Password	•••••		

Apply Changes

Once remote SQL access has been configured on the Exinda appliance, the next step is to create an ODBC data source on the client.

Create ODBC Data Source on Windows XP

Open **Administrative Tools** and select **Data Sources (ODBC)**. You should be presented with the following dialog.

()	📢 ODBC Data Source Administrator 💦 🔀			
U	User DSN System DSN File DSN Drivers Tracing Connection Pooling About			
	User Data Sources:			
	Name	Driver	Add	
	BASE Files Excel Files	Microsoft Access dBASE Driver (".dbf, ".ndx Microsoft Excel Driver (".xls, ".xlsx, ".xlsm, ".x	Remove	
	MS Access Database	Microsoft Access Driver (*.mdb, *.accdb)	Configure	
	 			
	An ODBC User data source stores information about how to connect to			
and can only be used on the current machine.				
		OK Cancel Apply	Help	

Select the **User DSN** tab or the **System DSN** tab depending on weather you wish the SQL data to be made available to only the current user (User DSN) or all users (System DSN). Then click **Add...**. This will start a wizard that allows you to create a new data source.

Create New Data Source		×
	Select a driver for which you want to set up a Name Microsoft Paradox Driver (*.db.) Microsoft Paradox-Treiber (*.db.) Microsoft Text Driver (*.txt; *.csv) Microsoft Text-Treiber (*.txt; *.csv) Microsoft Visual FoxPro Driver Microsoft Visual FoxPro-Treiber MySQL ODBC 3.51 Driver SQL Native Client SQL Server ■	a data source. 4. 4. 4. 4. 1. 1. 1. 3. 2! 2! 2!
	< Back Finish	Cancel

Select **MySQL ODBC Driver** and click **Finish**. You will be prompted to enter details about the SQL access using the form below:

📉 Connector/ODBC 3.51.27 - Add Data Source Name	? 🗙
Connector/ODBC	MusqL
Login Connect Options Advanced	Data Source Name (DSN)
Data Source Name	A unique name for this data source.
Description	Optional No
Server	
User	
Password	
Database	
]
Test Diagnostics >>	Ok Cancel Help

Data Source Name / Description	Enter a descriptive name for the DSN. E.g. 'Exinda SQL Database'.
Server	Enter the IP address of the Exinda appliance.
User	Enter the username you specified when enabling SQL access on the Exinda appliance.
Password	Enter the password you specified when enabling SQL access on the Exinda appliance.
Database	Once the above fields are configured, press the 'Test' button. If the connection attempt is successful, the 'Database' drop down will be populated with a list of available databases. Select 'monitor'.

Here is what a successful configuration looks like:

Connector/ODBC	3.51.27 - Add Data Source Name	? 🗙
	Connector/ODBC	MySQL
Login Connect O	ptions Advanced	
Data Source Name	Exinda SQL Database	Database
Description	Exinda SQL Database	The database to be current upon connect.
Server	172.16.1.240	Optional Yes Default [none]
User	database	
Password	*****	
Database	monitor	
	Test Diagnostics >>	<u>Ok</u> <u>C</u> ancel <u>H</u> elp

Click **OK**. This will add the 'Exinda SQL Database' to the list of available data sources that can be used by 3rd party applications on this client.

🚷 ODBC Data Source Ad	Iministrator			?	×
User DSN System DSN User Data Sources: Name Exinda SQL Database	File DSN Drivers Driver MySQL ODBC 3.51	Tracing Driver	Connection F	Pooling About Add	
An ODBC Us the indicated and can only	er data source stores I data provider. A Us I be used on the curre	informatior er data sou nt machine	n about how to irce is only visi a.	connect to ble to you,	
	ок с	Cancel	Apply	Help	

Create ODBC Data Source on Windows 7

Open Administrative Tools and select Data Sources (ODBC). You should be presented with the following

dialog.

ODBC Data Source Administrator								
Use	er DSN	System DSN	File DSN	Drivers	Tracing	Connection	Pooling About	
U	ser Data	a Sources:						
	Name		Driver				Add	
	dBASE Excel Fil	Files les	Microsoft A Microsoft E	ccess dB/ kcel Drive	ASE Driver r (* xls, * xl	r (*.dbf, *.ndx sx, *.xlsm, *.x	Remove	
	MS Acc	ess Database	Microsoft A	ccess Driv	ver (*.mdb,	*.accdb)	Configure	
	•					•		
An ODBC User data source stores information about how to connect to the indicated data provider. A User data source is only visible to you, and can only be used on the current machine.								
		(ОК		ancel	Apply	Help	

Select the **User DSN** tab or the **System DSN** tab depending on weather you wish the SQL data to be made available to only the current user (User DSN) or all users (System DSN). Then click **Add...**. This will start a wizard that allows you to create a new data source.

Create New Data Source		23		
	Select a driver for which you want to set up a data sou Name Microsoft Access dBASE Driver (*.dbf, *.ndx, *.mdx)	Irce.		
	Microsoft Access dbAbL briver (1.db), 1.db, 1.db, Microsoft Access Driver (*.mdb, *.accdb) Microsoft Access Text Driver (*.xt, *.csv) Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.xlsb) MySQL ODBC 5.1 Driver SQL Native Client SQL Server			
	< Back Finish Can	icel		

Select **MySQL ODBC Driver** and click **Finish**. You will be prompted to enter details about the SQL access using the form below:

12

MySQL Connector/ODBC Data Source Configuration							
Mysqu Connector/ODB	c 💿						
Connection Parameters	,						
Description:	Dente 3306						
 TCP/IP Server: Named Pipe: 	Port: 3300						
User: Password:							
Database:	▼ Test						
Details >>	OK Cancel Help						

Data Source Name / Description	Enter a descriptive name for the DSN. E.g. 'Exinda SQL Database'.
Server	Enter the IP address of the Exinda appliance.
User	Enter the username you specified when enabling SQL access on the Exinda appliance.
Password	Enter the password you specified when enabling SQL access on the Exinda appliance.
Database	Once the above fields are configured, press the 'Test' button. If the connection attempt is successful, the 'Database' drop down will be populated with a list of available databases. Select 'monitor'.

Here is what a successful configuration looks like:

MySQL Connector/ODBC Data Source Configuration								
Musque Connector/ODBC								
Connection Parameters	5							
Data Source Name:	Exinda							
Description:	Exinda SQL Database							
TCP/IP Server:	172.16.1.240	Port: 3306						
Named Pipe:								
User:	database							
Password:	••••							
Database:	monitor 👻	<u>T</u> est						
Details >>	ок <u>с</u>	ancel <u>H</u> elp						

Click **OK**. This will add the 'Exinda SQL Database' to the list of available data sources that can be used by 3rd party applications on this client.

S ODBC Data Source Administrator									
User DSN System DS	N File DSN Drivers Tracing Connection Pooling About								
User Data Sources:									
Name	Driver Add								
dBASE Files Microsoft Access dBASE Driver (*.dbf, *.ndx Excel Files Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.x Exinda MySQL ODBC 5.1 Driver MS Access Database Microsoft Access Driver (*.mdb, *.accdb)									
•	4								
An ODBC User data source stores information about how to connect to the indicated data provider. A User data source is only visible to you, and can only be used on the current machine.									
	OK Cancel Apply Help								

View SQL Access data in Microsoft Excel

You will need a 3rd party application that is capable of accessing data from ODBC data sources. For the purposes of this How to Guide, we will use Microsoft Excel as an example.

From the Data tab in Excel, select From Other Sources > From Microsoft Query.

Ca	, 9) ⇒										
	Home	Ins	ert Pa	ge Layout	Fo	rmulas	Data	Revie	w	View			
From Access	From Web	From Text	From Othe Sources	r Existin Connect	ng ions	Refresh All 🔻	Dia Conr Prop Edit I	ections erties .inks	AZ↓ Z↓	AZA Sort	Filter	🖗 Clear 🚡 Reapp Ƴ Advan	ly ced
		Get Ext	<u>**</u> }	From SQL Se	erver	- to - 50) Convert	able Terre	a et da		Sort & Fil	lter	
	A1			into Excel as	a Tab	le or Pivo	tTable rep	ort.	on da	Ld			
	А	В	<u>#</u>	From Analys	sis Sen	vices					Н	1	
1				Create a con Import data	into E	on to a SC xcel as a 1	2L Server A Table or Pi	votTable	report	s cube. t.			
2			<u>#</u> _	From XML D)ata In	port							
3				Open or ma	p a XN	IL file into	o Excel.						
4			24 <u>6</u>	From Data C	onne	tion Wiz	ard						
5				import data	for an	unlisted	format by	using th	e Data	1			
6				Connection	Wizar	d and OL	EDB.						
7			档	From Micros	for an	unlisted	format by	using th	e Micr	osoft			
8				Query Wizar	d and	ODBC.	i orinde by	asing th	e mier	ovore			
9													

You will be presented with a dialog box that allows you to select the DSN you created in the previous chapter.

Choose Data Source	×
Databases Queries OLAP Cubes	OK
<new data="" source=""> dBASE Files*</new>	Cancel
Excel Files* Exinda*	Browse
MS Access Database*	<u>O</u> ptions
	<u>D</u> elete
☑ ✓ Use the Query Wizard to create/edit queries	1

Select the **Exinda SQL Database** DSN. This will allow you to choose from the available tables and select the columns to query. Select a table and click the > button to move that table's fields into the list of columns to query.

Query Wizard - Choose Columns		×
What columns of data do you want to in Available tables and columns:	clude in your query? Columns in your query: id in_ip ex_ip in_pott ex_port protocol app_id packets_in	4 M
Preview Now Options	< Back Next >	Cancel

Click through the wizard, optionally specifying columns to filter or sort by. Then click Finish to return the data to Excel.

Query Wizard - Finish		×
What would you like to do next? • <u>Beturn Data to Microsoft Excel</u> • <u>View data or edit query in Microsoft Query</u>		<u>S</u> ave Query
2	< <u>B</u> ack Finish	Cancel

The Exinda appliance will now be queried and the data will be returned to the Excel spreadsheet.

) 🖬 🤊	- (°" -) =		Book1 - Micro	soft Excel		Table Tools					_ = ×
C	Home	Insert P	age Layout F	ormulas D	ata Reviev	w View	Design					@ _ = ×
Pa	ste 🕜 🚺	alibri - BIJU-	11 · A a			Wrap Text	Gener	al •	Conditional Fo	ormatas Cell Table * Styles *	Telesert τ Σ Delete τ J Format τ 2	Sort & Find & Filter * Select *
Clip	board 🕞	Font		•	Alignment		Gi .	Number 🕞	S	tyles	Cells	Editing
	A1	•	f _x									×
	A	В	С	D	E	F	G	Н		J	K	L
1	id 💌	in_ip 🔽	ex_ip 🔽	in_port 💌	ex_port 💌	protocol 🔽	app_id 🔽	packets_in	bytes_in 💌	packets_out	bytes_out	max_tput_in 🔽 max
2	2714022	2886729828	3197021980	0	0	17	222	. 0) 0		6 1581	0
3	2714021	2886729850	2523226833	0	0	6	201	E	3 1104		6 1621	883
4	2714020	2886729972	3339138632	0	0	6	201	12	2 3324	1	2 1666	1329
5	2714019	2886729939	3494527776	0	0	1	201	22	2 1760		0 0	448
6	2714018	2886729972	1249745235	0	0	6	207	16	3 3184	1	9 3825	1185
7	2714017	2886729877	1494265866	0	0	6	201		/ 1942	1	3 1539	1553
8	2714016	2886729939	3339139912	U	U	6	201	t	5 2129		6 877	1703
9	2714015	2886729939	1113983841	U	U	6	207		2162		9 1909	1729
10	2714014	2886729972	1249733985	U	U	6	201	t dag	i 1104		8 2283	883
11	2714013	2886729882	3413282335	U	U	6	222	118	12450	11	4 11368	919
12	2714012	2000720000	3010048001	U 0	0	0	201		+ Z308	04	1 01107	1887
10	2714011	2000/28020	3410333040	0	0	0	222	21	1 10000	24	4 21137	690
14	2714010	2000730009	2149403094	0	0	0	201	30	0020 0020	4	- 3080 5 1/070	11/130
10	2714008	2000728000	2023220710	0	0	6	201	2/	1 2020	0	0 19272	2271
17	2714000	2886729855	1114779712	0	0	6	201	24	3055		7 775	2271
18	2714006	2886729855	3452668776	0	0	6	201	90	47511	q	0 10534	2546
19	2714005	2886729888	3452668776	0	0	6	201		3183		7 743	2546
20	2714004	2886729939	3494527776	0	0	6	201	19	2552	3	7 3483	530
21	2714003	2886729974	2827985172	0	0	6	207	37	7 7416	3	6 4420	1507
22	2714002	2886729888	3539452941	n n	0	6	201	P	1131		8 3813	904
14 4	► ► Shee	et3 🖓						i i	4			
Rea	idy										🌐 🔲 🛄 100% 🤇	🕀 — – 🤄



Chapter 2: SQL Schema

There are a total of 10 tables available for access via SQL.

Name	Description
flows_ hourly	Flow records at an hourly resolution, that is, information for each flow is stored hourly, on the hour.
flows_daily	Flow records at daily resolution, that is, information for each flow is stored daily, on the day at midnight.
flows_ monthly	Flow records at monthly resolution, that is, information for each flow is stored monthly, on the 1st day of the month at midnight.
urls_hourly	URL records for each flow record that contain 1 or more urls at hourly resolution, that is, information for each url is stored hourly, on the hour.
urls_daily	URL records for each flow record that contain 1 or more urls at daily resolution, that is, information for each url is stored daily, on the day at midnight.
urls_ monthly	URL records for each flow record that contain 1 or more urls at monthly resolution, that is, information for each url is stored monthly, on the 1st day of the month at midnight.
app_ids_ and_names	Application records. The record contains a name, id and a flag to indicate if the application has been deleted. Deleted applications are used when labeling historical data.
summary_ applications	Flow records summarized by application. Each record contains information gathered over a 5 minute period.
summary_ hosts_ex	Flow records summarized by external host. Each record contains information gathered over a 5 minute period.
summary_ hosts_in	Flow records summarized by internal host. Each record contains information gathered over a 5 minute period.

flows Table

The following table describes the schema of the flows_* SQL tables.

Field	Туре	Description
id	unsigned 32-bit integer	A unique id that defines this record. This is the primary key.
in_ip	binary	A 16 byte (128 bit) representation of the internal IPv6 address (the IP

Field	Туре	Description
	(128 bit)	address on the LAN side of the Exinda appliance) of the flow. IPv4 addresses are represented as IPv4 mapped format.
ex_ip	binary (128 bit)	A 16 byte (128 bit) representation of the external IPv6 address (the IP address on the WAN side of the Exinda appliance) of the flow. IPv4 addresses are represented as IPv4 mapped format.
in_port	unsigned 24-bit integer	The TCP or UDP port number on the internal side (the LAN side of the Exinda appliance) of the flow. ¹
ex_port	unsigned 24-bit integer	The TCP or UDP port number on the external side (the WAN side of the Exinda appliance) of the flow. ¹
protocol	unsigned 24-bit integer	The IANA assigned IP protocol number of the flow. See http://www.iana.org/assignments/protocol-numbers/ for more information.
app_id	unsigned 24-bit integer	The internal Exinda Application ID assigned to this flow. This represents Exinda's classification of the flow - 0 means unclassified.
packets_ in	unsigned 64-bit integer	The number of inbound (WAN -> LAN) packets recorded for this flow over the sample period.
bytes_in	unsigned 64-bit integer	The number of inbound (WAN -> LAN) bytes recorded for this flow over the sample period.
packets_ out	unsigned 64-bit integer	The number of outbound (LAN -> WAN) packets recorded for this flow over the sample period.
bytes_out	unsigned 64-bit integer	The number of outbound (LAN -> WAN) bytes recorded for this flow over the sample period.
max_tput_ in	unsigned 64-bit integer	The maximum inbound (WAN -> LAN) throughput observed for this flow during the sample period.
max_tput_ out	unsigned 64-bit integer	The maximum outbound (LAN -> WAN) throughput observed for this flow during the sample period.
intervals_ in	unsigned 24-bit integer	The number of 10 second intervals there was inbound (WAN -> LAN) traffic observed for this flow during the sample period (bps).
intervals_	unsigned	The number of 10 second intervals there was outbound (LAN -> WAN) traffic

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19

Field	Туре	Description
out	24-bit integer	observed for this flow during the sample period (bps).
timestamp	unsigned 32-bit integer	A UNIX timestamp (number of seconds since epoch - 1st Jan 1970) that represents the start of the sample period.
in_ username	string	A string representation of the username that was assigned to the internal IP of this flow when it was created (if available).
ex_ username	string	A string representation of the username that was assigned to the external IP of this flow when it was created (if available). ¹
rtt	unsigned 32-bit integer	Round Trip Time in milliseconds. A measure if the time a packet takes to leave a device, cross a network and return. ²
network_ delay	unsigned 32-bit integer	A normalized measure of the time taken for transaction data to traverse the network. ²
network_ jitter	unsigned 32-bit integer	A normalized measure of the network_delay variability. ²
server_ delay	unsigned 32-bit integer	A normalized measure of the time taken for a server to respond to a transaction request. ²
bytes_ lost_in	unsigned 64-bit integer	The number of bytes lost due to retransmissions (WAN -> LAN). ²
bytes_ lost_out	unsigned 64-bit integer	The number of bytes lost due to retransmissions (LAN -> WAN). ²
aps	unsigned 64-bit integer	Application Performance Score. A measure of an applications performance on the network. ²

¹ in_port and ex_port are only defined when the IP protocol is TCP (6) or UDP (17) and the Exinda was unable to classify the flow (so the app_id is 0).

² See the APS HowTO Guide for further information.

The flows_* tables are available as views that represent the binary IPv6 addresses in string format. The views tables are flows_*_verbose (e.g. flows_hourly_verbose). The fields are identical to the above except for the following:

Field	Туре	Description
in_ ip	string	A string representation of the internal address (the IP address on the LAN side of the Exinda appliance) of the flow. IPv4 mapped IPv6 addresses are represented as IPv4 dotted quad.
ex_ ip	string	A string representation of the external address (the IP address on the WAN side of the Exinda appliance) of the flow. IPv4 mapped IPv6 addresses are represented as IPv4 dotted quad.

app_ids_and_names Table

The following table describes the schema of the app_ids_and_names SQL table.

Field	Туре	Description
app_id	unsigned 24-bit integer	A unique id that defines the Application. This is the primary key.
app_ name	string	The Application name (e.g HTTP, Hotmail)
deleted_ flag	unsigned 8-bit integer	A flag indicating if the Application has been deleted from the appliance $(0 = no, 1 = yes)$

urls Table

The following table describes the schema of the urls_* SQL tables.

Field	Туре	Description
id	unsigned 32-bit integer	This id references an id in the corresponding parent flows_* table. There can be multiple url records referencing the same flow id, so this field is not unique.
url	string	The URL (host) extracted from the HTTP header of the parent flow.
packets_ in	unsigned 64-bit integer	The number of inbound (WAN -> LAN) packets recorded for this URL over the sample period.
bytes_in	unsigned 64-bit integer	The number of inbound (WAN -> LAN) bytes recorded for this URL over the sample period.
packets_ out	unsigned 64-bit integer	The number of outbound (LAN -> WAN) packets recorded for this URL over the sample period.
bytes_	unsigned	The number of outbound (LAN -> WAN) bytes recorded for this URL over the

Field	Туре	Description
out	64-bit integer	sample period.
max_ tput_in	unsigned 64-bit integer	The maximum inbound (WAN -> LAN) throughput observed for this URL during the sample period.
max_ tput_out	unsigned 64-bit integer	The maximum outbound (LAN -> WAN) throughput observed for this URL during the sample period.
intervals_ in	unsigned 16-bit integer	The number of 10 second intervals there was inbound (WAN -> LAN) traffic observed for this URL during the sample period.
intervals_ out	unsigned 16-bit integer	The number of 10 second intervals there was outbound (LAN -> WAN) traffic observed for this URL during the sample period.

Note id's are only consistent across the same sample periods. For example, id's in the urls_ hourly table only reference id's in the flows_hourly table.

summary_applications Table

The summary_application table summarizes the aggregated data from the Exinda. The following table describes the schema of the summary_applications SQL table.

Field	Туре	Description
in_port	unsigned 24-bit integer	The TCP or UDP port number on the internal side (the LAN side of the Exinda appliance) ¹
ex_port	unsigned 24-bit integer	The TCP or UDP port number on the external side (the WAN side of the Exinda appliance) ¹
protocol	unsigned 24-bit integer	The IANA assigned IP protocol number of the flow. See http://www.iana.org/assignments/protocol-numbers/ for more information.
app_id	unsigned 24-bit integer	The internal Exinda Application ID assigned to this flow. This represents Exinda's classification of the flow. A zero value should be interpreted as unclassified.
bytes_in	unsigned 64-bit integer	The number of inbound (WAN -> LAN) bytes recorded for this flow over the sample period.

Field	Туре	Description
bytes_out	unsigned 64-bit integer	The number of outbound (LAN -> WAN) bytes recorded for this flow over the sample period.
packets_ in	unsigned 64-bit integer	The number of inbound (WAN -> LAN) packets recorded for this flow over the sample period.
packets_ out	unsigned 64-bit integer	The number of outbound (LAN -> WAN) packets recorded for this flow over the sample period.
intervals_ in	unsigned 24-bit integer	The number of 10 second intervals there was inbound (WAN -> LAN) traffic observed for this flow during the sample period.
intervals_ out	unsigned 24-bit integer	The number of 10 second intervals there was outbound (LAN -> WAN) traffic observed for this flow during the sample period.
timestamp	unsigned 32-bit integer	A UNIX timestamp (number of seconds since epoch - 1st Jan 1970) that represents the start of the sample period.
max_tput_ in	unsigned 64-bit integer	The maximum inbound (WAN -> LAN) throughput observed for this flow during the sample period (bps).
max_tput_ out	unsigned 64-bit integer	The maximum outbound (LAN -> WAN) throughput observed for this flow during the sample period (bps).
rtt	unsigned 32-bit integer	Round Trip Time in milliseconds. A measure of the time a packet takes to leave a device, cross a network and return. ²
network_ delay	unsigned 32-bit integer	A normalized measure of the time taken for transaction data to traverse the network. ²
network_ jitter	unsigned 32-bit integer	A normalized measure of the network_delay variability. ²
server_ delay	unsigned 32-bit integer	A normalized measure of the time taken for a server to respond to a transaction request. ²
bytes_ lost_in	unsigned 64-bit integer	The number of bytes lost due to retransmissions (WAN -> LAN). ²

Field	Туре	Description
bytes_ lost_out	unsigned 64-bit integer	The number of bytes lost due to retransmissions (LAN -> WAN). ²

¹ in_port and ex_port are only defined when the IP protocol is TCP (6) or UDP (17) and the Exinda was unable to classify the flow (so the app_id is 0).

² See the APS How To Guide for further information.

summary_hosts Table

The following table describes the schema of the summary_hosts_in and summary_hosts_ex SQL tables. The table fields are identical apart from the ip field - this field represent the IPv4 or IPv6 address of an internal host (summary_hosts_in) or an external host (summary_hosts_ex).

A host is internal if it is on the LAN side of the appliance and external when on the WAN side.

Field	Туре	Description
ip	binary string	A string representation of the internal or external IPv4 or IPv6 address of the host.
bytes_in	unsigned 64-bit integer	The number of inbound (WAN -> LAN) bytes recorded for this flow over the sample period.
bytes_out	unsigned 64-bit integer	The number of outbound (LAN -> WAN) bytes recorded for this flow over the sample period.
packets_ in	unsigned 64-bit integer	The number of inbound (WAN -> LAN) packets recorded for this flow over the sample period.
packets_ out	unsigned 64-bit integer	The number of outbound (LAN -> WAN) packets recorded for this flow over the sample period.
intervals_ in	unsigned 24-bit integer	The number of 10 second intervals there was inbound (WAN -> LAN) traffic observed for this flow during the sample period (bps).
intervals_ out	unsigned 24-bit integer	The number of 10 second intervals there was outbound (LAN -> WAN) traffic observed for this flow during the sample period (bps).
timestamp	unsigned 32-bit integer	A UNIX timestamp (number of seconds since epoch - 1st Jan 1970) that represents the start of the sample period.

Field	Туре	Description
max_tput_ in	unsigned 64-bit integer	The maximum inbound (WAN -> LAN) throughput observed for this flow during the sample period.
max_tput_ out	unsigned 64-bit integer	The maximum outbound (LAN -> WAN) throughput observed for this flow during the sample period.
rtt	unsigned 32-bit integer	Round Trip Time in milliseconds. A measure if the time a packet takes to leave a device, cross a network and return. ¹
network_ delay	unsigned 32-bit integer	A normalized measure of the time taken for transaction data to traverse the network. ¹
network_ jitter	unsigned 32-bit integer	A normalized measure of the network_delay variability. ¹
server_ delay	unsigned 32-bit integer	A normalized measure of the time taken for a server to respond to a transaction request. ¹
bytes_ lost_in	unsigned 64-bit integer	The number of bytes lost due to retransmissions (WAN -> LAN). ¹
bytes_ lost_out	unsigned 64-bit integer	The number of bytes lost due to retransmissions (LAN -> WAN). ¹

¹ See the APS How To Guide for further information.