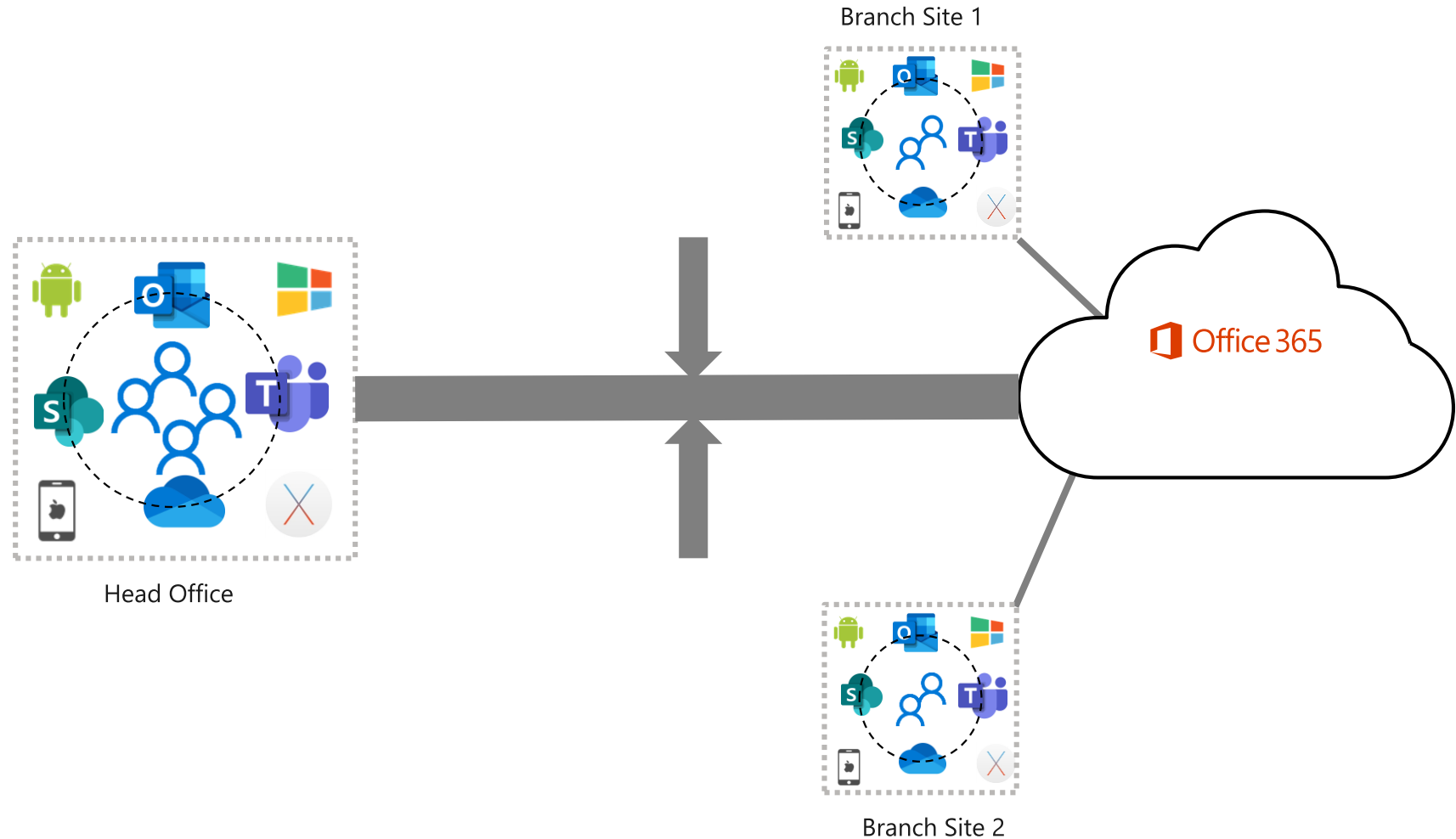Microsoft

Network Bandwidth Estimation & Capacity Planning for Office 365
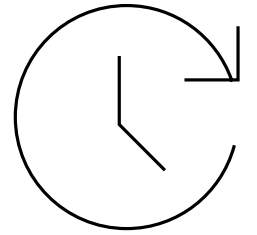
Network Bandwidth Requirement

How do I estimate network bandwidth requirement for Office 365 traffic?

Branch Site 1

Head Office

Office 365

Branch Site 2

Planning Resources & Bandwidth Calculators

[Network and Migration Planning for Office 365](#)

[Exchange Client Network Bandwidth calculator](#)

[Skype for Business Bandwidth Calculator](#)
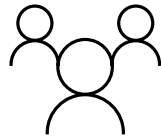
[Network Planner for Microsoft Teams](#)

[Technical Case Study from Microsoft IT](#)

[Microsoft Teams Network Requirements](#)

Bandwidth Calculators

What is the challenge?

## User Profile or Persona dependent

- Use available profiles or personas
- Define custom profiles or personas
- Map users to profiles or personas
- Output is only as accurate as the Input

Exchange Organisation Data	
On-premises	
8 Hours	
100%	
0.5%	
3	
100 MB	
0.5%	
Availability Service	
0.5%	

TimeZone Config	
Setting	
Morning Peak Time (24hr clock)	
Morning Peak Duration (hours)	
Afternoon Peak Time (24hr clock)	
Afternoon Peak Duration (hours)	

User Profile 1 (Light)	
	50 KB
	5
	20
	2.00 GB
	3
	0.5
%	125%
	20%
	Yes

User Profile 2 (M...	
Average Message Size (KB)	
Messages Sent Per Mailbox Per Day	
Messages Received Per Mailbox Per Day	
Avg Mailbox Size (GB)	
Avg Recipients Per Meeting	
Average Meetings Per Mailbox Per Day	
Web Client/Online Mode Attachment Read %	
Mobile Client Attachment Read %	
Ensure OST download in 1 Working Day	

User Profile 3 (Heavy)	
	50 KB
	20
	80
	2.00 GB
	3
	2.0
%	125%
	20%
	Yes

User Profile 4 (Ve...	
Average Message Size (KB)	
Messages Sent Per Mailbox Per Day	
Messages Received Per Mailbox Per Day	
Avg Mailbox Size (GB)	
Avg Recipients Per Meeting	
Average Meetings Per Mailbox Per Day	
Web Client/Online Mode Attachment Read %	
Mobile Client Attachment Read %	
Ensure OST download in 1 Working Day	

Proven Practices for Bandwidth Estimation

Run a pilot batch with mixed user profiles

- Monitor and measure network bandwidth usage for pilot batch.
- Extrapolate bandwidth usage information for total number of users
- Pilot batch should have the right mix of user profiles, it can even be a complete site office where there is sufficient headroom for Internet bandwidth (typically more than 50%).
- Analyze your Internet link utilization trends for last 6months to a Year, identify sites that are already using maximum capacity or have less than 20% headroom.
- For Microsoft Teams bandwidth usage figures are already published here, for Exchange online and SharePoint online user behavior drives bandwidth usage.
- As users become familiar with cloud services their behavior changes and this may drive down the bandwidth usage with time, for example using OneDrive for Business to share files and collaborate online.
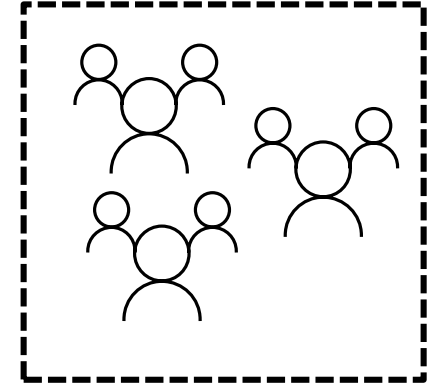
Measuring Network Bandwidth Usage with Office 365 Network Bandwidth Meter
http://aka.ms/bandwidth

Office 365 Network Bandwidth Meter
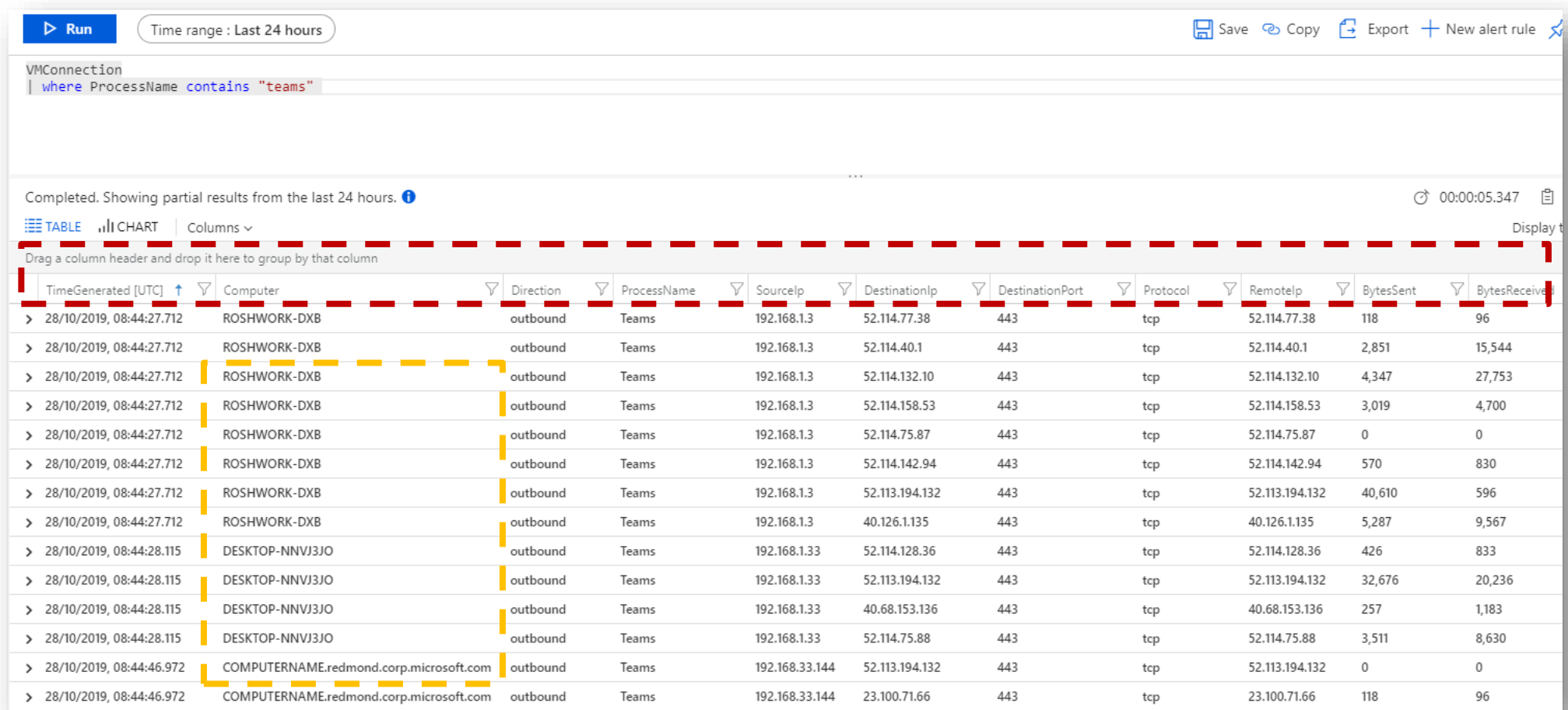
How does this work?

1. Pilot batch users using Office 365 services from home, office or school
2. Administrator has setup an **Azure Monitoring workspace** in Azure and deployed **Service Map** solution
3. Users have **Microsoft Monitoring Agent** (MMA) & **Dependency Agent** installed and connected to the Azure Monitoring workspace
4. MMA is sending network connection information to workspace in Azure
5. Administrator can connect to Azure Monitoring workspace and query the connection information for multiple users or a specific user
6. Can be used to monitor or measure any connection, not specific to Office 365

Azure

OMS

Azure subscription

Cloud, Office 365

Network Connection Information

OMS

Users
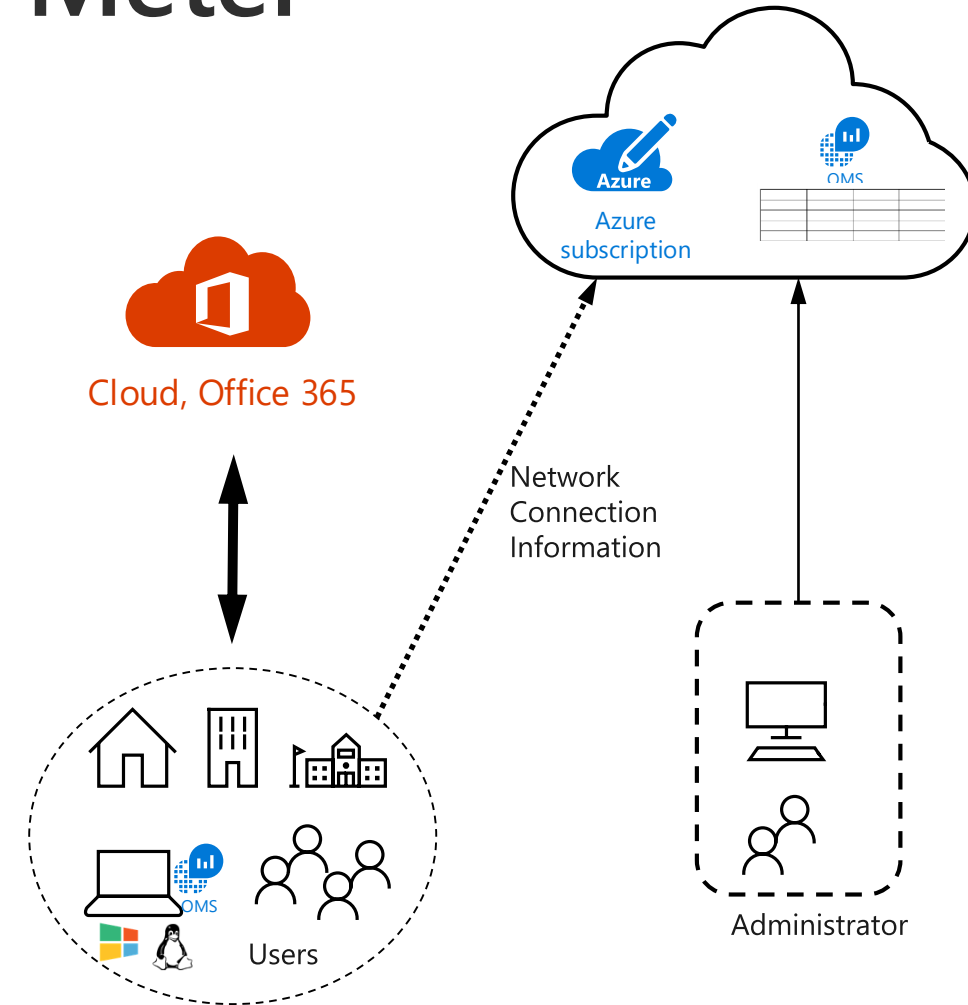
Administrator

Network Connection Information

What sort of network connection information can the administrator view?
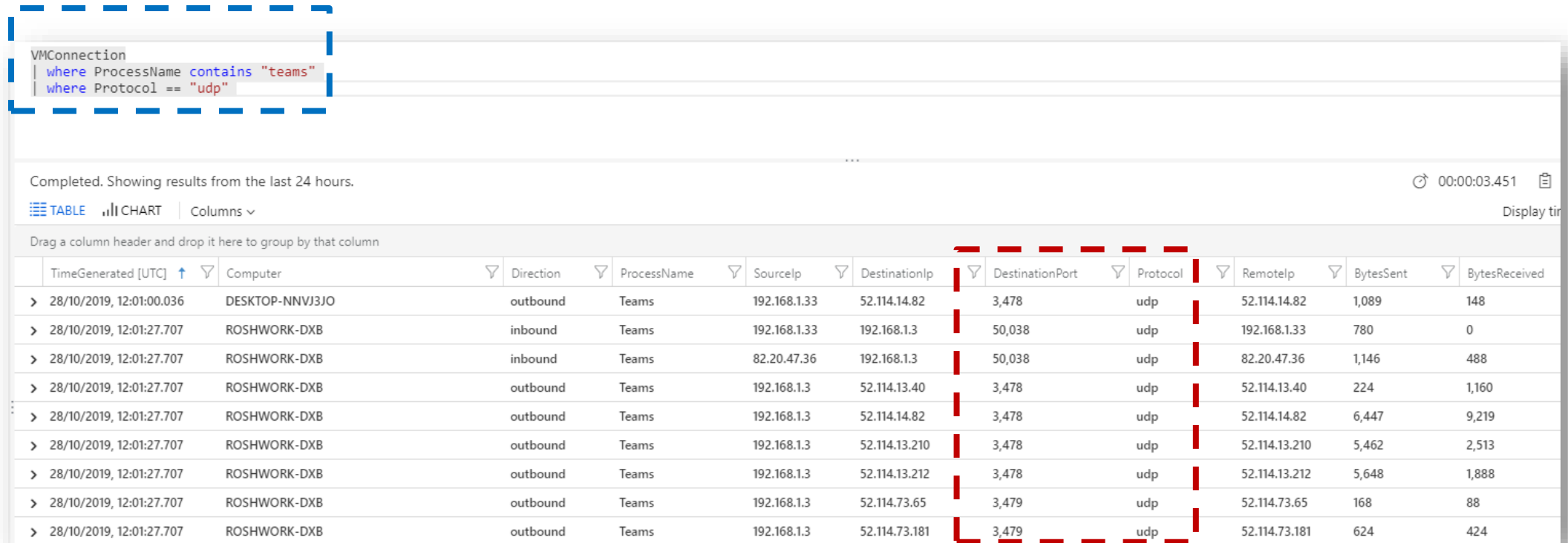
Can I view Network Information for Teams UDP traffic?

New

Yes! UDP is now supported. Ensure you are using Dependency Agent version 9.10.0.7820 or newer.

```
VMConnection
| where ProcessName contains "teams"
| where Protocol == "udp"
```

Completed. Showing results from the last 24 hours.

≡ TABLE   ⅠⅠⅠ CHART | Columns ˅   ⏱ 00:00:03.451   ▤   Display tir

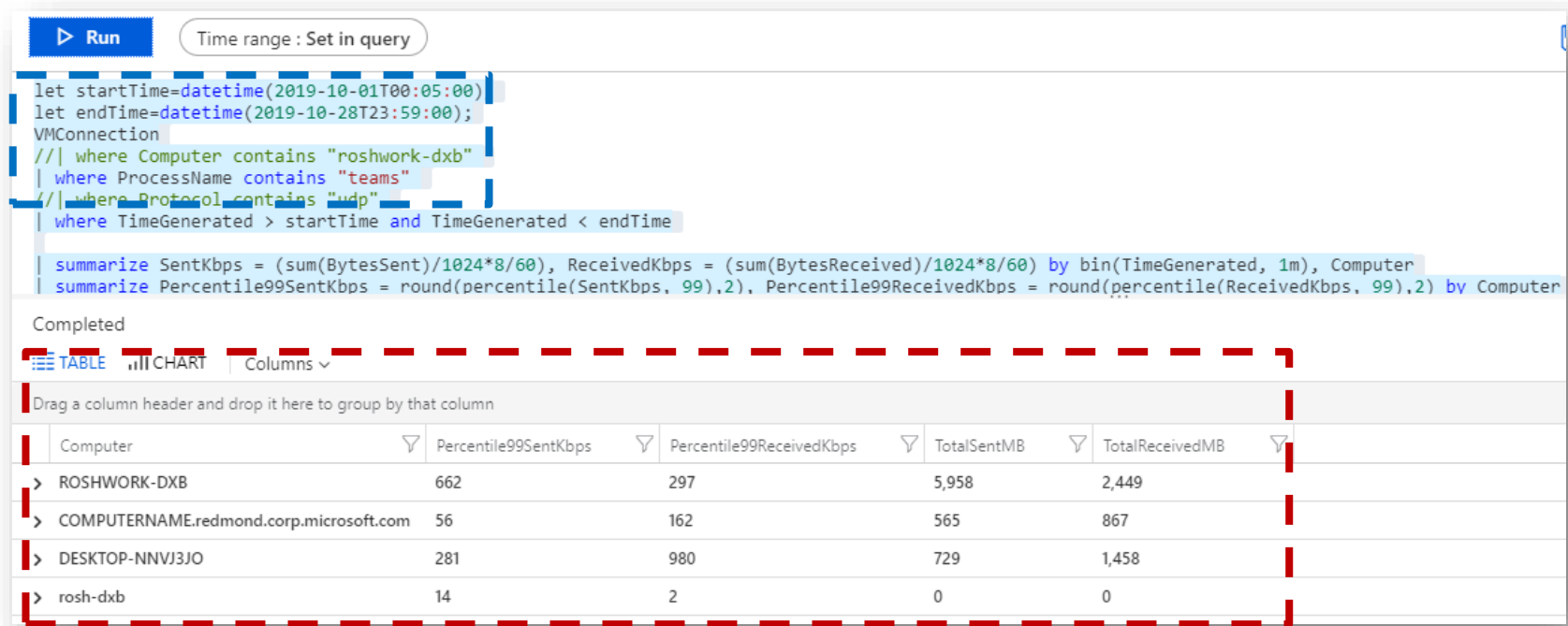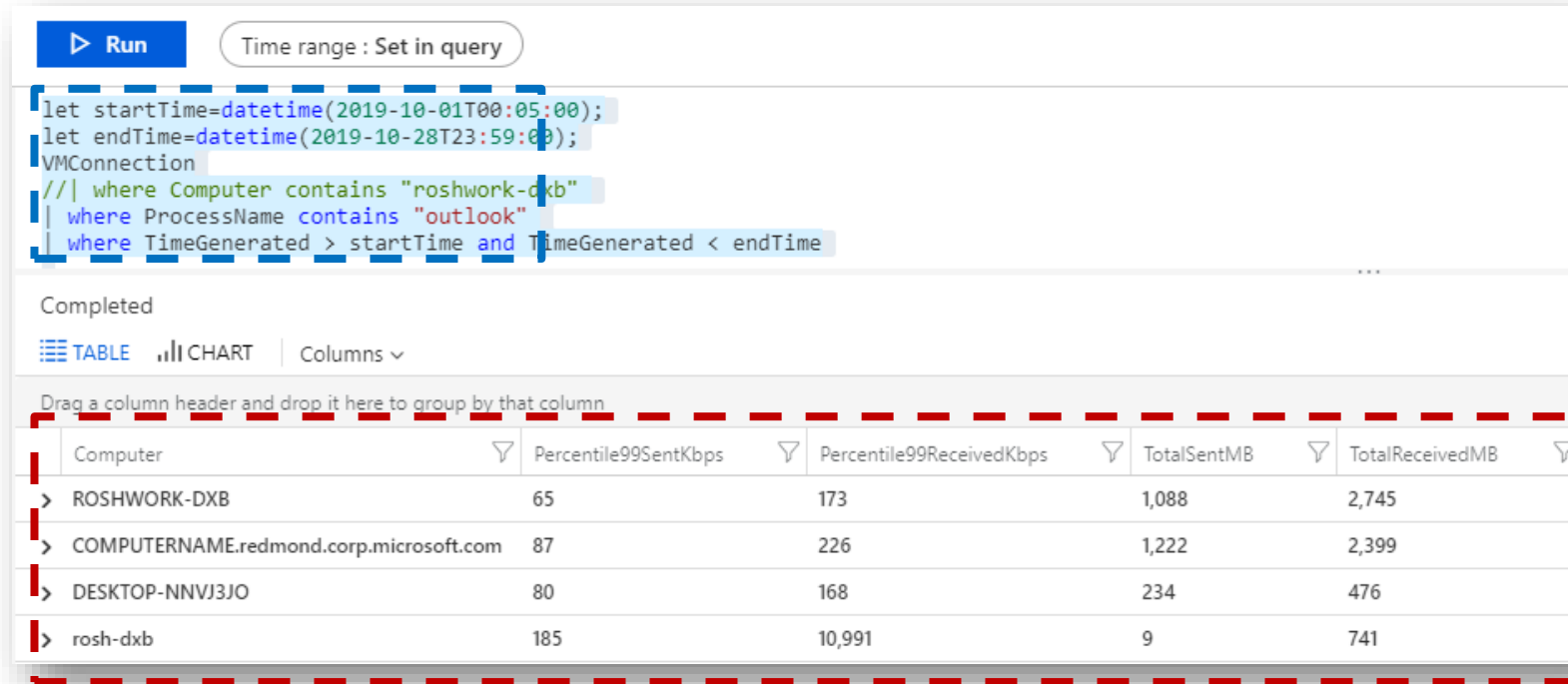Drag a column header and drop it here to group by that column

TimeGenerated [UTC] ↑	Computer	Direction	ProcessName	SourceIp	DestinationIp	DestinationPort	Protocol	RemoteIp	BytesSent	BytesReceived
28/10/2019, 12:01:00.036	DESKTOP-NNVJ3JO	outbound	Teams	192.168.1.33	52.114.14.82	3,478	udp	52.114.14.82	1,089	148
28/10/2019, 12:01:27.707	ROSHWORK-DXB	inbound	Teams	192.168.1.33	192.168.1.3	50,038	udp	192.168.1.33	780	0
28/10/2019, 12:01:27.707	ROSHWORK-DXB	inbound	Teams	82.20.47.36	192.168.1.3	50,038	udp	82.20.47.36	1,146	488
28/10/2019, 12:01:27.707	ROSHWORK-DXB	outbound	Teams	192.168.1.3	52.114.13.40	3,478	udp	52.114.13.40	224	1,160
28/10/2019, 12:01:27.707	ROSHWORK-DXB	outbound	Teams	192.168.1.3	52.114.14.82	3,478	udp	52.114.14.82	6,447	9,219
28/10/2019, 12:01:27.707	ROSHWORK-DXB	outbound	Teams	192.168.1.3	52.114.13.210	3,478	udp	52.114.13.210	5,462	2,513
28/10/2019, 12:01:27.707	ROSHWORK-DXB	outbound	Teams	192.168.1.3	52.114.13.212	3,478	udp	52.114.13.212	5,648	1,888
28/10/2019, 12:01:27.707	ROSHWORK-DXB	outbound	Teams	192.168.1.3	52.114.73.65	3,479	udp	52.114.73.65	168	88
28/10/2019, 12:01:27.707	ROSHWORK-DXB	outbound	Teams	192.168.1.3	52.114.73.181	3,479	udp	52.114.73.181	624	424

https://aka.ms/dependencyagentwindows
https://aka.ms/dependencyagentlinux

Office 365 Network Bandwidth Usage

Measure using ProcessName filter for Teams

Queries available at https://aka.ms/bandwidth

Office 365 Network Bandwidth Usage

Measure using ProcessName filter for Exchange Online (Outlook)

Queries available at https://aka.ms/bandwidth

Office 365 Network Bandwidth Usage

Measure using DestinationIP filter for SharePoint Online and OneDrive for Business

Queries available at https://aka.ms/bandwidth

Can I export this data?

Yes, you can export this data as CSV or use services like PowerBI dashboard to visualize output.
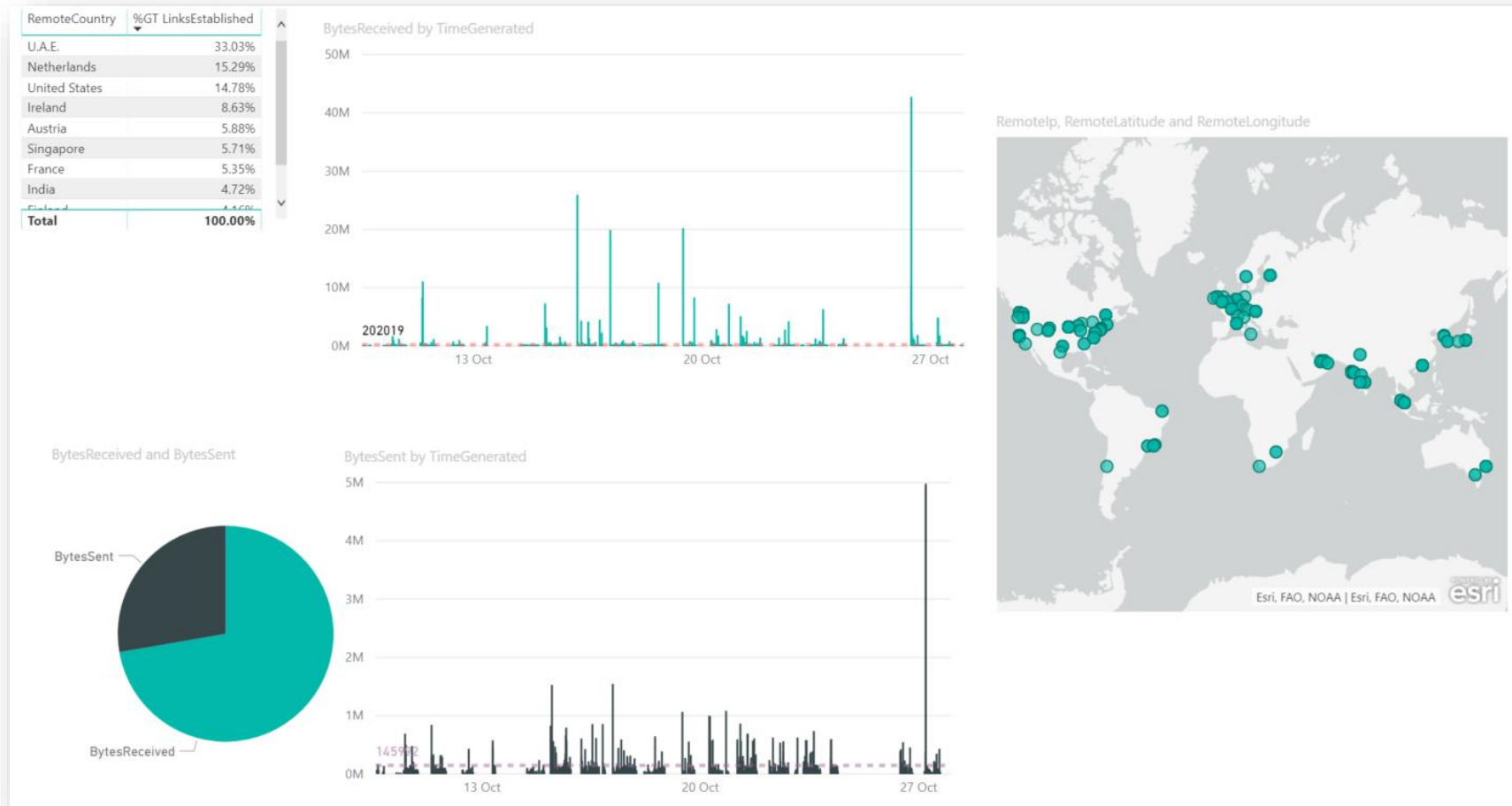
Sample dashboards available at https://aka.ms/bandwidth

Capacity Planning Notes

- Use pilot users to measure network bandwidth usage using Office 365 Network Bandwidth meter, use this information to extrapolate capacity required.

- Office 365 Network Bandwidth meter is a concept that leverages Azure Monitoring and Service Map, its not a stand-alone toolset.

- Using local Internet breakout reduces the risk of under provisioning or over provisioning capacity at a central egress.

- By following our guidance 'Principles of Network Connectivity' you are planning for Internet bandwidth for that short leg between your Network Edge and Microsoft Global Network, this does not require private links or specially provisioned links that require additional investment (cost & effort).

- Always plan for additional headroom to allow room for growth, businesses adopt cloud services much faster than you think. Where possible plan for hardware upgrades in advance and rely on soft upgrades to increase capacity at short notice.