



Azure Cost Optimization & Management

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Agenda (All timings are in EST)

- 11:00am- 1:00pm EST : HOLs
- 1:00pm - 1:45pm EST : Lunch Break
- 1:45pm - 3:15pm EST : HOLs
- 3:15pm - 3:30pm EST : Coffee Break
- 3:30pm - 5:00pm EST : HOLs



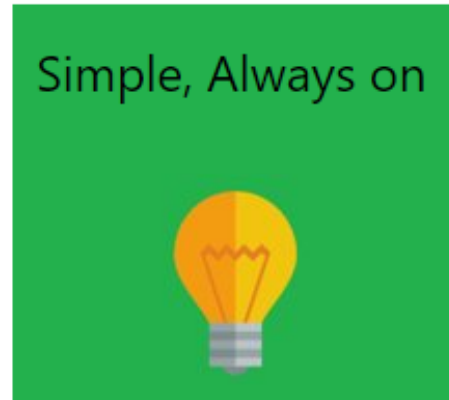
Azure Pricing Calculator

Azure Pricing Calculator Principles

- Always-on, Easy-to-use, Reliable tool for pricing Azure services.



Data Quality



Simplicity



Collaboration



Channel compatibility

Azure Pricing Calculator

<https://azure.microsoft.com/en-us/pricing/calculator/>

The screenshot shows the Azure Pricing Calculator interface. At the top, there's a header with the title "Pricing calculator" and the subtitle "Configure and estimate the costs for Azure products". Below this is a navigation bar with four tabs: "Products", "Example Scenarios", "Saved Estimates", and "FAQ". The "Products" tab is currently selected. Below the navigation bar is a search bar labeled "Search products". On the left side, there's a "Featured" sidebar with a list of categories: Compute, Networking, Storage, Web, Mobile, Containers, Databases, Analytics, and AI + Machine Learning. The main content area displays a grid of product cards, each with an icon, a title, and a brief description. The products shown are: Virtual Machines, Storage Accounts, Azure SQL Database, App Service, Azure Cosmos DB, Azure Kubernetes Service (AKS), Azure Functions, Cognitive Services, and Cost Management. Red callout boxes are drawn over the interface: one points to the "Example Scenarios" tab, another points to the "Saved Estimates" tab, and a third points to the "FAQ" tab. A fourth callout box points to the "Example Scenarios" section on the right side of the image.

Pricing calculator
Configure and estimate the costs for Azure products

Products Example Scenarios Saved Estimates FAQ

Select a product to include it in your estimate.

Search products

Featured

- Compute
- Networking
- Storage
- Web
- Mobile
- Containers
- Databases
- Analytics
- AI + Machine Learning

Virtual Machines
Provision Windows and Linux virtual machines in seconds

Storage Accounts
Durable, highly available, and massively scalable cloud storage

Azure SQL Database
Managed, intelligent SQL in the cloud

App Service
Quickly create powerful cloud apps for web and mobile

Azure Cosmos DB
Globally distributed, multi-model database for any scale

Azure Kubernetes Service (AKS)
Simplify the deployment, management, and operations of Kubernetes

Azure Functions
Process events with serverless code

Cognitive Services
Add smart API capabilities to enable contextual interactions

Cost Management
Optimize what you spend on the cloud, while maximizing cloud potential

Example Scenarios

There are some example scenarios. You can add or remove products in your estimates.

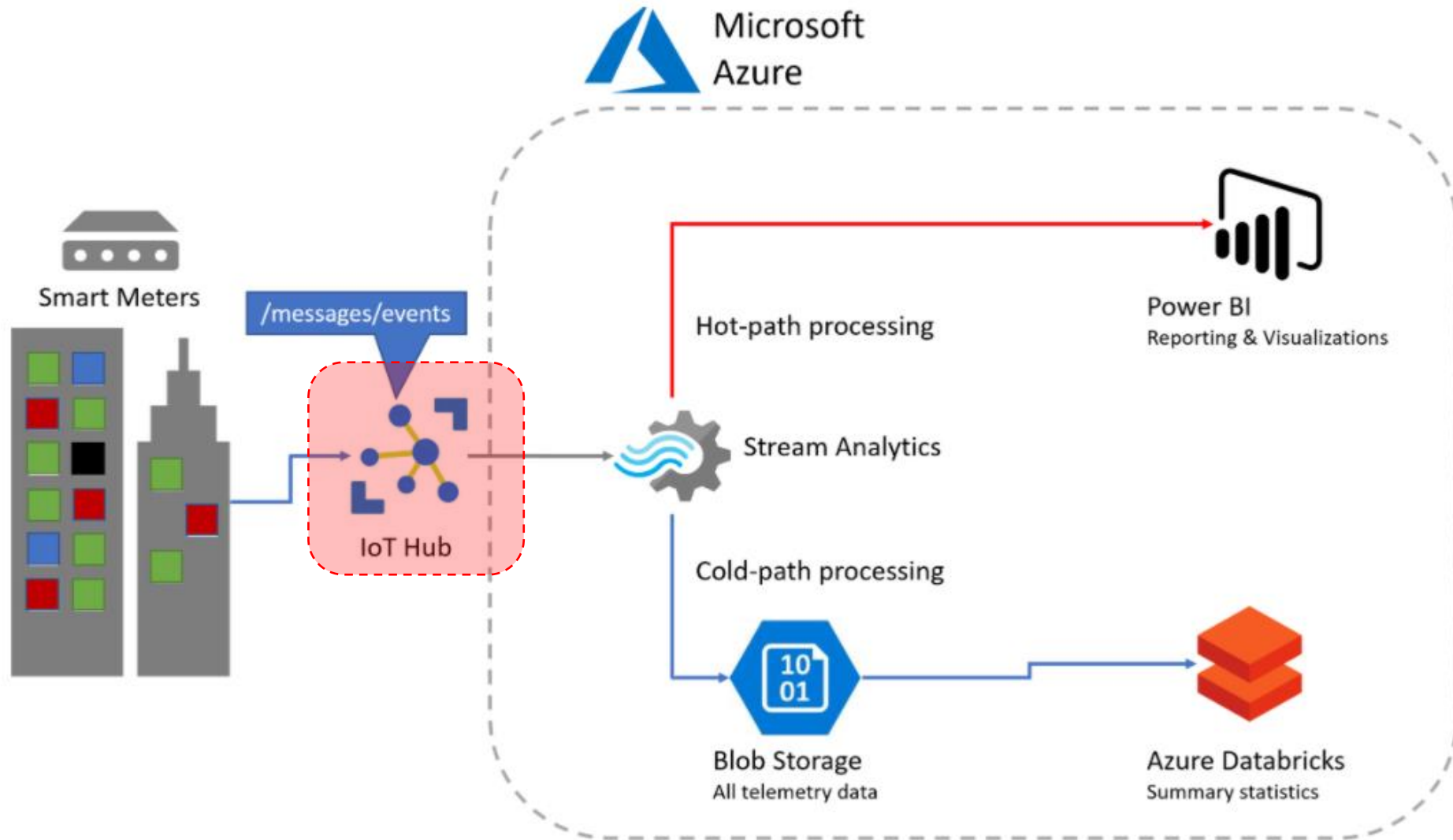
Saved Estimates

You can save your estimates after signing in.

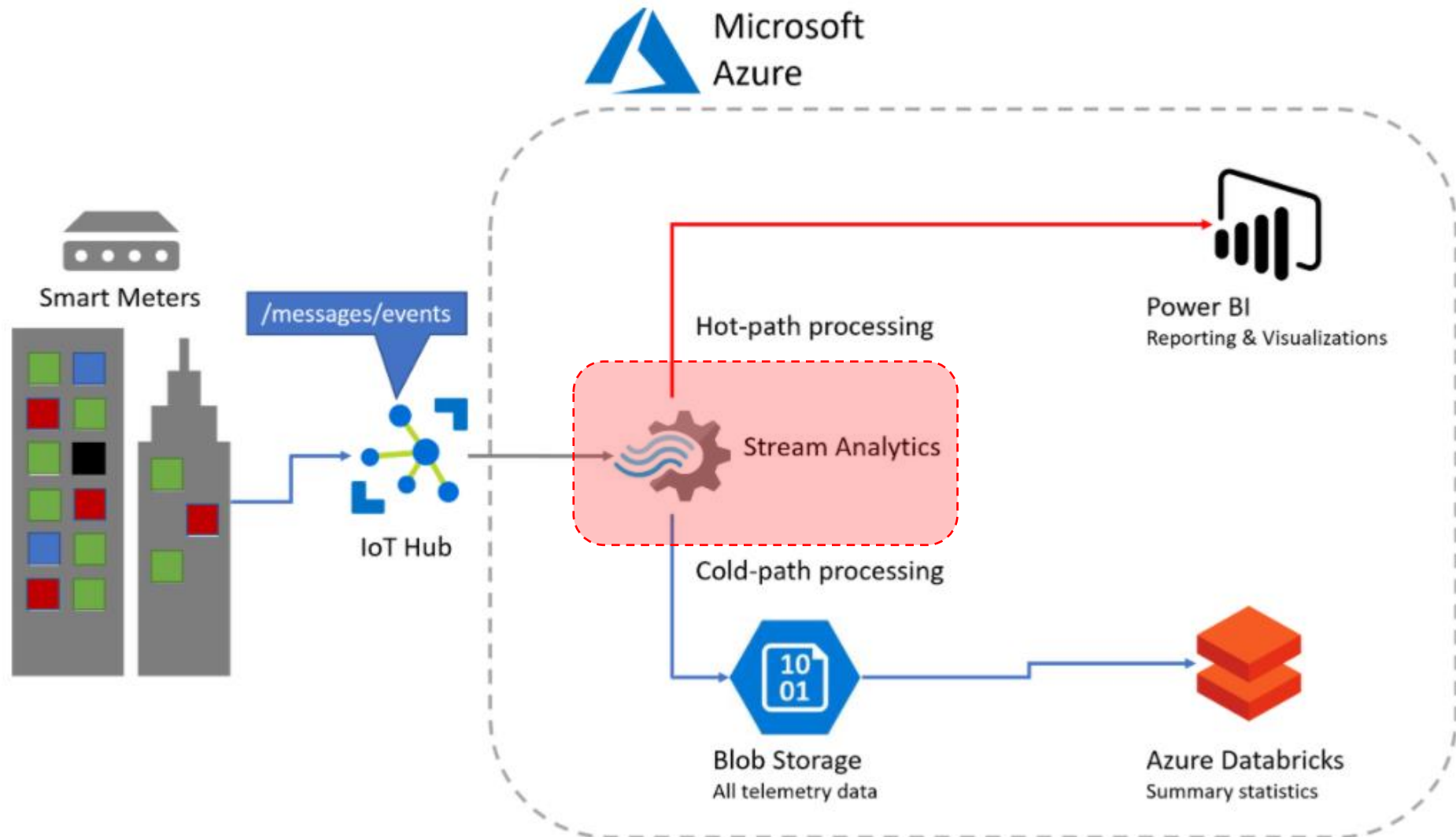
FAQ

You can see Pricing Calculator Frequently Asked Questions

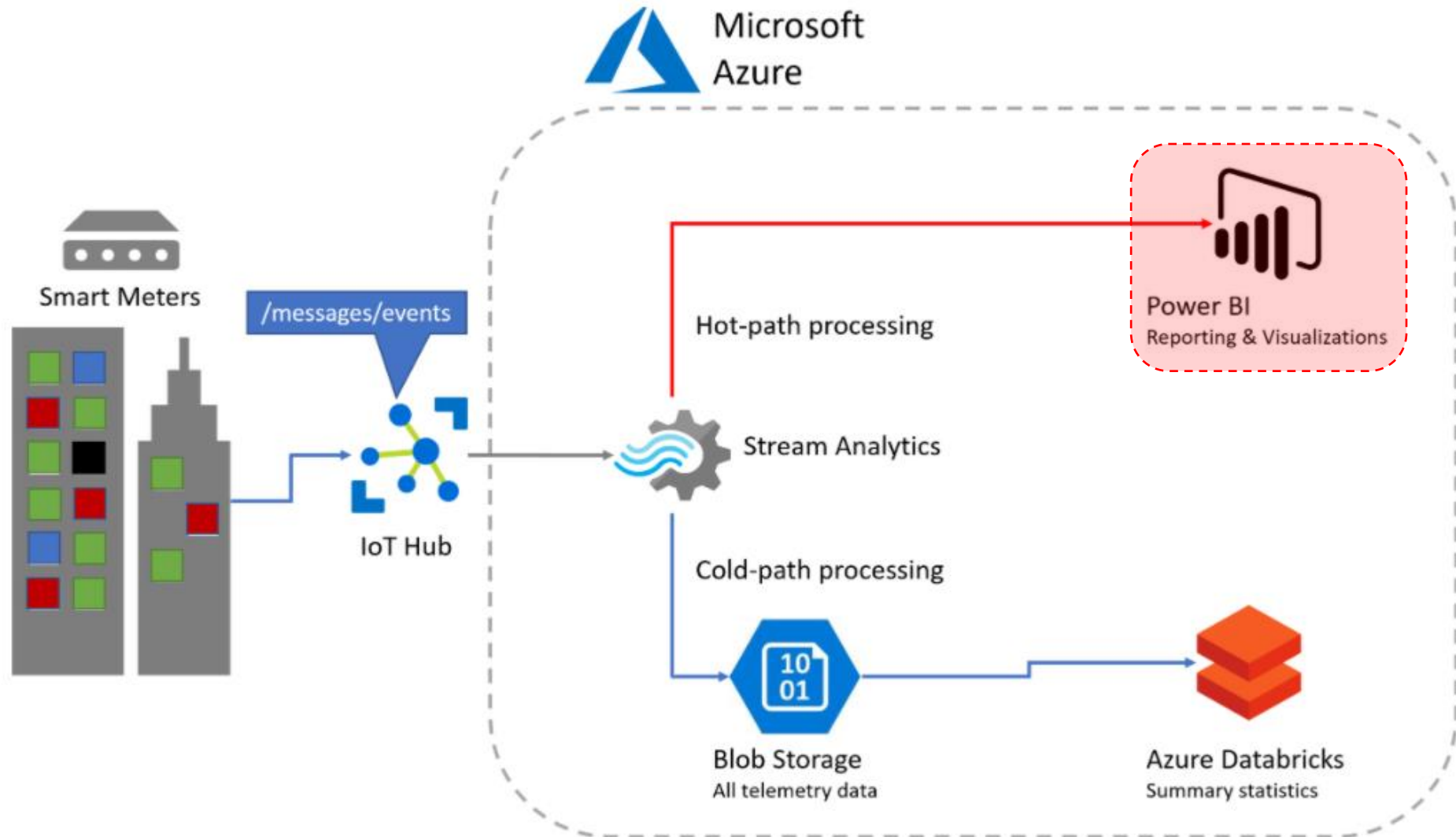
Pricing your architecture



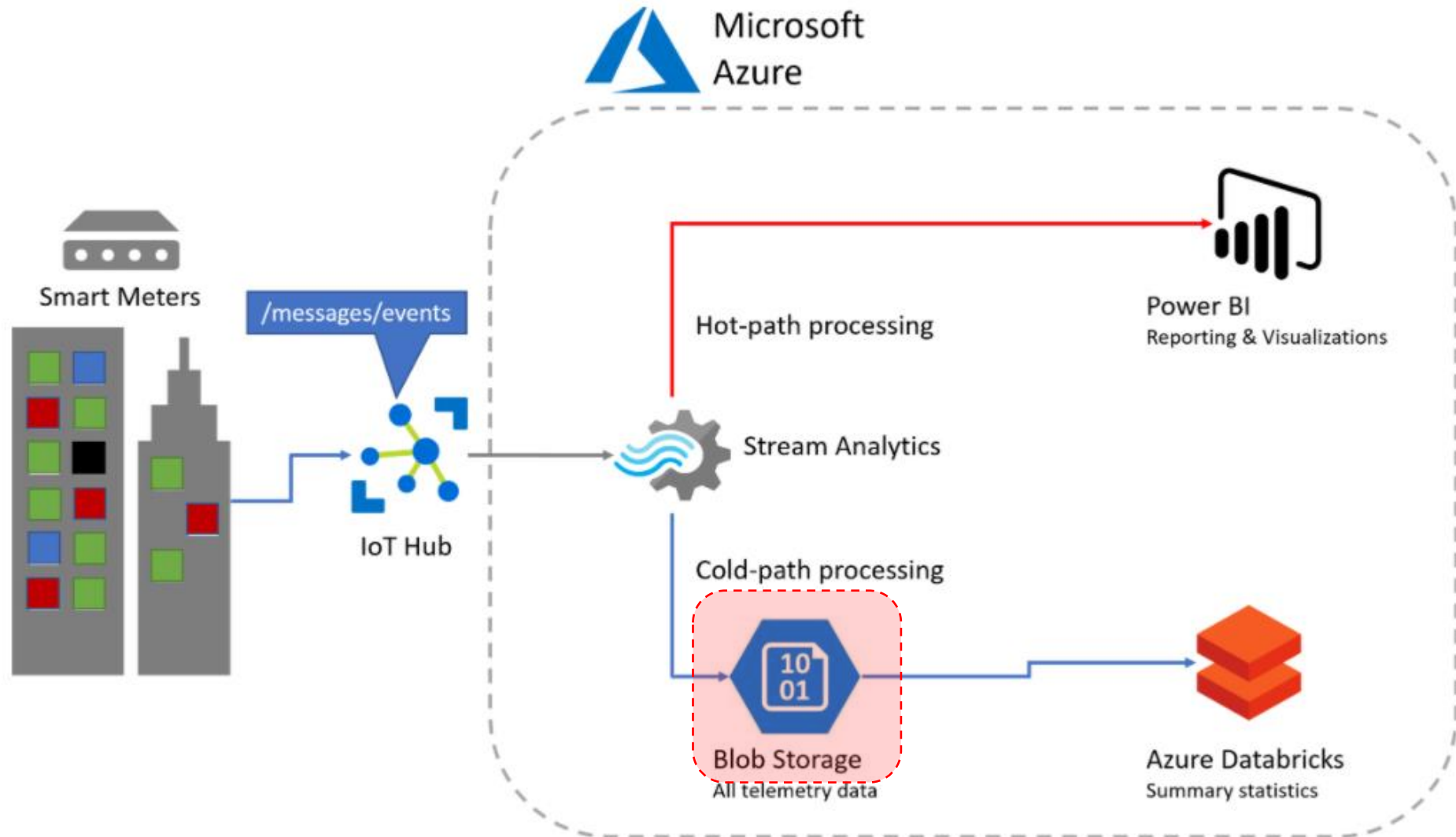
Pricing your architecture



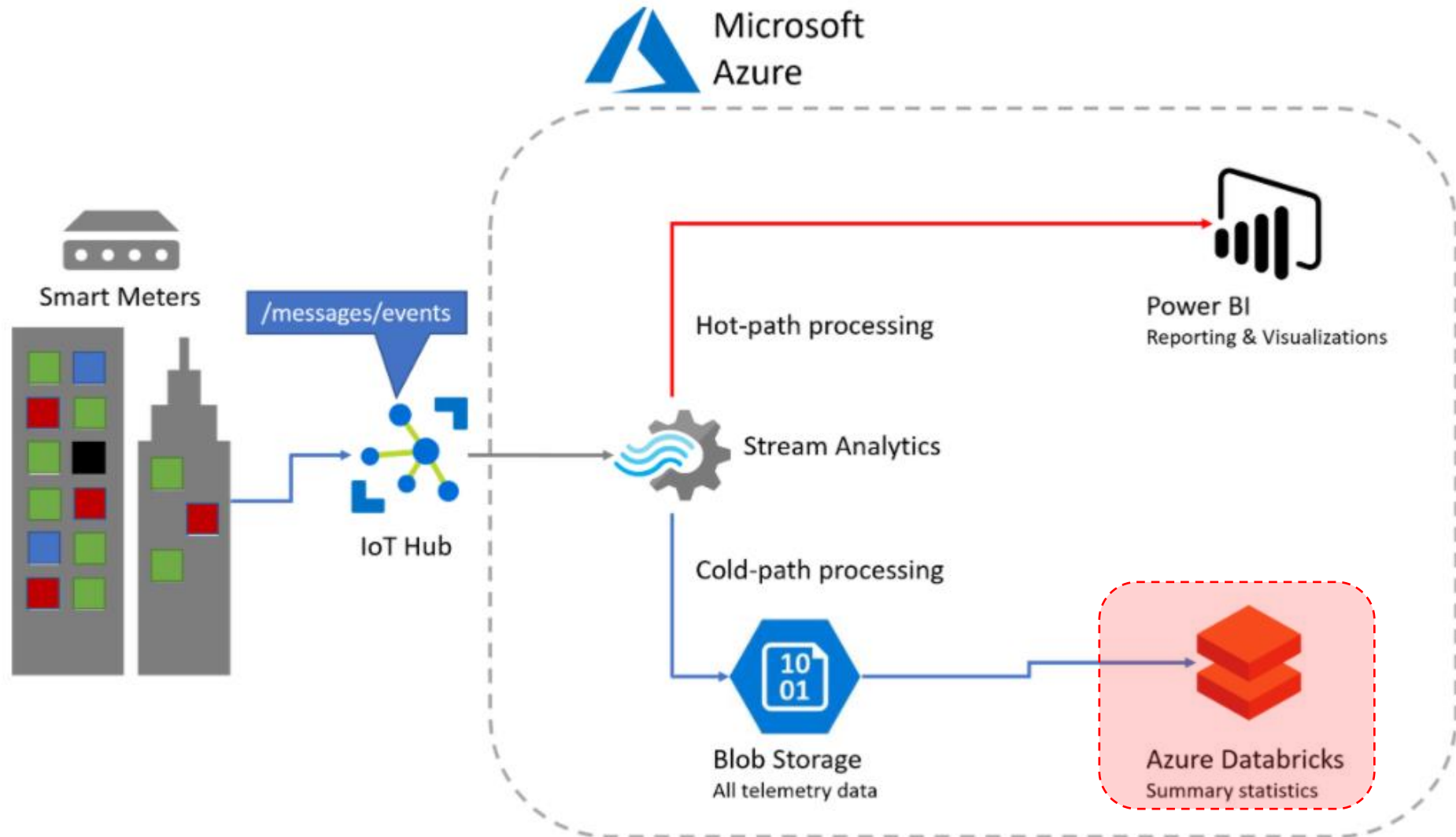
Pricing your architecture



Pricing your architecture



Pricing your architecture



Custom naming

The screenshot displays the Azure portal interface for configuring virtual machines. It highlights how custom names are integrated into the naming convention for VMs, which are then used in Excel exports.

Annotations and Callouts:

- Name estimates:** Points to the input field labeled "Your Estimate" at the top of the configuration pane.
- Name service headers:** Points to the input field labeled "Virtual Machines" in the configuration pane.
- Estimate for Contoso:** Points to the dropdown menu in the "INSTANCE:" section, which shows the selected configuration: "D2 v3: 2 vCPU(s), 8 GB RAM, 50 GB Temporary storage, \$0.209/hour".
- VM for database:** Points to the VM icon and the custom name "VM for database" in the summary section of the configuration pane.

Configuration Details:

- REGION:** West US
- OPERATING SYSTEM:** Windows
- TYPE:** (OS Only)
- TIER:** Standard
- INSTANCE:** D2 v3: 2 vCPU(s), 8 GB RAM, 50 GB Temporary storage, \$0.209/hour

Summary Section:

- Virtual Machines: VM for database**
- 1 D2 v3 (2 vCPU(s), 8 GB RAM) x 730 Hours; Windows – ...**
- VM for database**
- REGION:** West US
- OPERATING SYSTEM:** Windows
- TYPE:** (OS Only)
- TIER:** Standard

Custom names become available in the Excel exports

Export estimates to excel sheets / Currency selector

Estimated monthly cost

\$152.62

Export

Save

Share

US Dollar (\$)

Prices are estimates and are not intended as actual price quotes. Actual prices may vary depending upon the date of purchase, currency of payment, and type of agreement you enter with Microsoft. Contact a Microsoft sales representative for additional information on pricing.

Purchase options >

Users can export estimates in Excel format

Select a currency of your choice

Frequently Used

US Dollar (\$)

Euro (€)

British Pound (£)

Australian Dollar (\$)

Indian Rupee (₹)

Canadian Dollar (\$)

All

US Dollar (\$)

Euro (€)

Swiss Franc. (CHF)

Argentine Peso (\$)

Australian Dollar (\$)

Danish Krone (kr)

Canadian Dollar (\$)

Indonesian Rupiah (Rp)

Japanese Yen (¥)

Korean Won (₩)

New Zealand Dollar (\$)

Norwegian Krone (kr)

Russian Ruble (₽)

Saudi Riyal (SR)

South African Rand (R)

Swedish Krona (kr)

Taiwanese Dollar (NT\$)

Turkish Lira (TL)

British Pound (£)

Mexican Peso (MXN\$)

Malaysian Ringgit (RM\$)

Indian Rupee (₹)

Hong Kong Dollar (HK\$)

Brazilian Real (R\$)

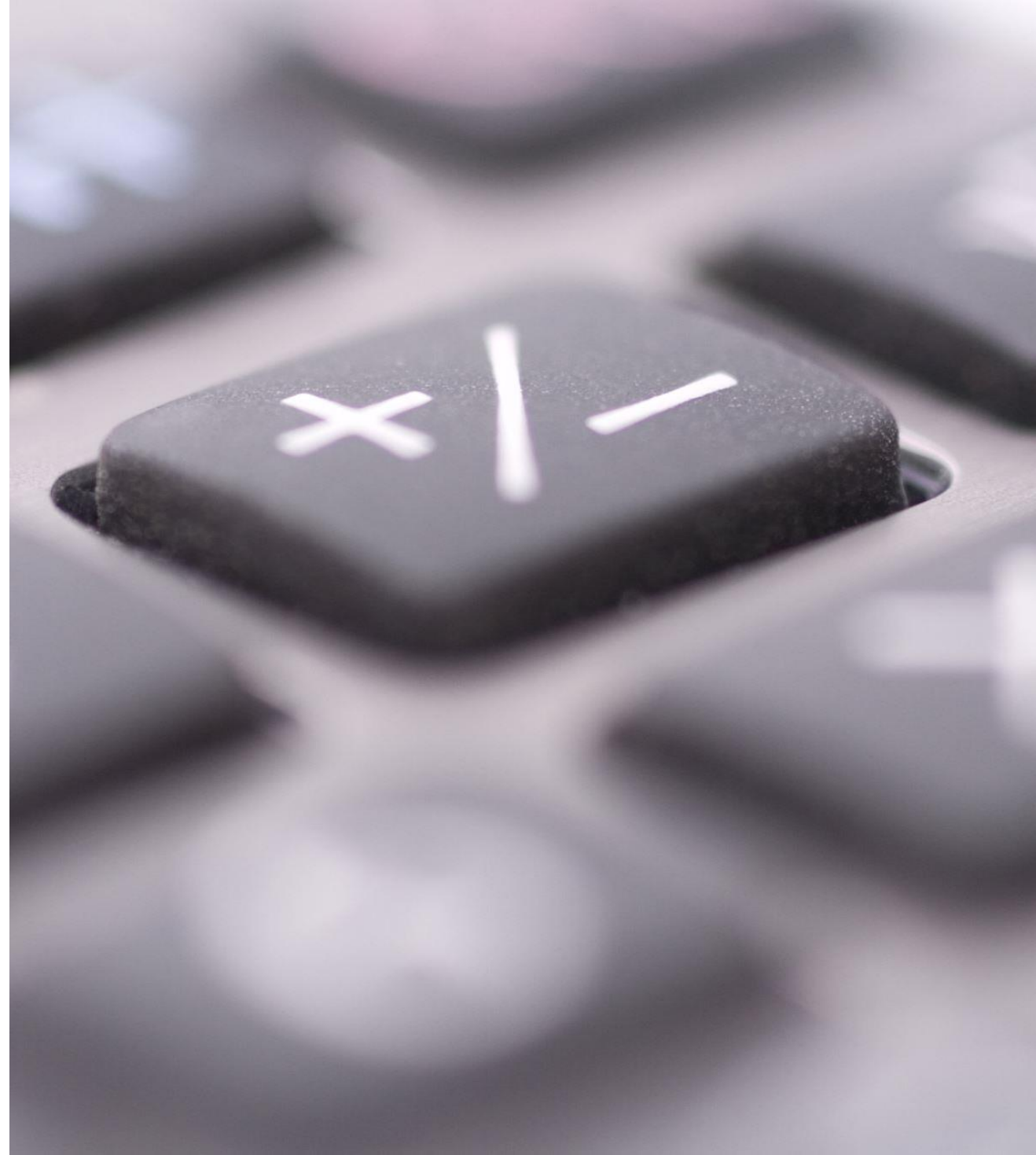
Sample Excel export from calculator

Microsoft Azure Estimate				
Estimate for Contoso				
Service type	Custom name	Region	Description	Estimated Cost
Virtual Machines	VM for database	West US	1 D2 v3 (2 vCPU(s), 8 GB RAM) x 730 Hours; Windows – (OS Only); Pay as you go; 1 managed OS disks – \$10, 100 transaction units	\$158.51
Support			Support	\$0.00
			Licensing Program	Microsoft Online Services Agreement
			Monthly Total	\$158.51
			Annual Total	\$1,902.10
Disclaimer				
All prices shown are in US Dollar (\$). This is a summary estimate, not a quote. For up to date pricing information please visit https://azure.microsoft.com/pricing/calculator/ This estimate was created at 10/15/2019 4:28:00 AM UTC.				

Monitoring your costs

3 pillars of effective cost management with Azure

- TCO Calculator
- Azure Advisor
- Cost Analysis





TCO Calculator

Total Cost of Ownership (TCO) Calculator

<https://azure.microsoft.com/en-us/pricing/tco/calculator/>

Total Cost of Ownership (TCO) Calculator

Estimate the cost savings you can realize by migrating your workloads to Azure

1


2

3

Define your workloads

Adjust assumptions

View report


 My saved reports

Define your workloads

Enter the details of your on-premises workloads. This information will be used to understand your current TCO and recommended services in Azure.

Servers

Enter the details of your on-premises server infrastructure. After adding a workload, select the workload type and enter the remaining details.

 Add server workload

You can evaluate potential cost savings if you migrate on-premises application workloads to Microsoft Azure.

Define your workloads

- Enter the details of your on-premises workloads

1. Need to add Servers workload or Databases
2. Need to add storage
3. Monthly network bandwidth requirement
4. Click [Next]

Define your workloads

Enter the details of your on-premises workloads. This information will be used to understand your current TCO and recommended services in Azure.

Servers

Enter the details of your on-premises server infrastructure. After adding a workload, select the workload type and enter the remaining details.

[+ Add server workload](#)

Databases

Enter the details of your on-premises database infrastructure. After adding a database, enter the details of your on-premises database infrastructure in the Source section. In the Destination section, select the Azure service you would like to use.

[+ Add database](#)

Storage

Enter the details of your on-premises storage infrastructure. After adding storage, select the storage type and enter the remaining details.

[+ Add storage](#)

Networking

Enter the amount of network bandwidth you currently consume in your on-premises environment.

Outbound bandwidth ⓘ

<input type="text" value="1"/>	1
GB	▼


Adjust assumptions

1

2

3

Define your workloadsAdjust assumptionsView report

 My saved reports

Adjust assumptions

The following assumptions are being made as part of the TCO model. These key assumptions usually vary among customers. We recommend reviewing these values for accuracy.

Currency

US Dollar (\$)

Software Assurance coverage (provides Azure Hybrid Benefit)

Enable this if you have purchased this benefit for your on-premises Windows or SQL Servers. If enabled, Azure Hybrid Benefit (AHB) will be applied to Azure estimates. AHB helps you get more value from your on-premises licenses — save up to 40 percent on virtual machines and up to 82 percent with Azure Reserved Virtual Machines (VM) instances.

Windows Server Software Assurance coverage

SQL Server Software Assurance coverage

[Learn more about Software Assurance >](#) [Learn more about Azure Hybrid Benefit >](#)

Geo-redundant storage (GRS)

GRS replicates your data to a secondary region that is hundreds of miles away from the primary region.

[Learn more about GRS >](#)

Virtual Machine costs

Enable this for the Calculator to not recommend Bs-series virtual machines

[Learn more about Bs-series virtual machines >](#)

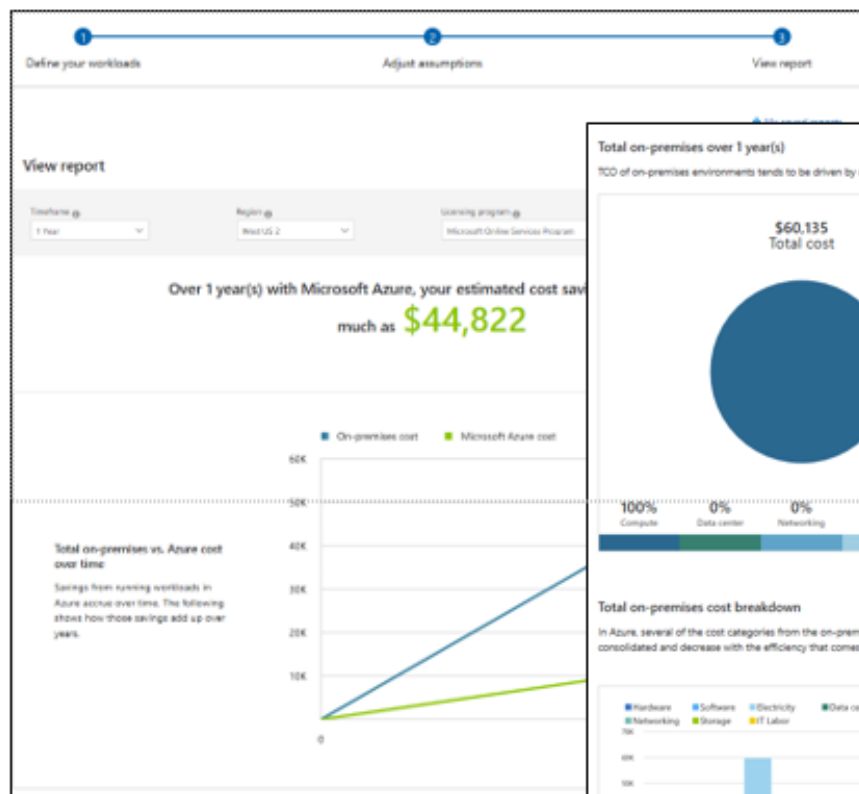
Select a currency of your choice

Enable if Azure Hybrid Benefit (AHB) will be applied to Azure estimates

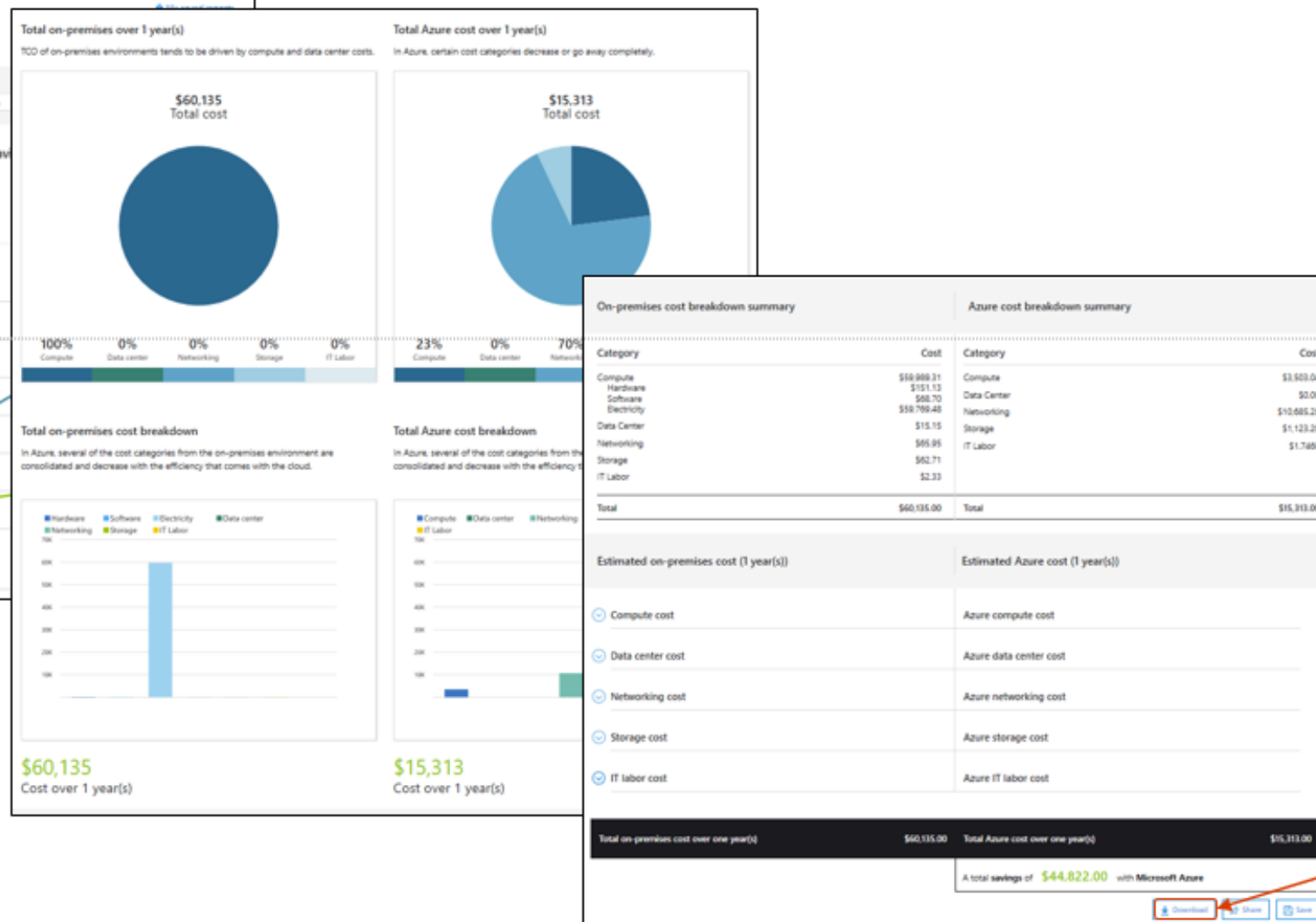
Enable if geo-redundant storage is required

Enable if you don't want to use Bs-series for Virtual machine

View report



Sample



Download as PDF



Azure Advisor

Azure Advisor recommendations

Guides you to improve your Azure resources across four categories

High Availability

Improve resource availability to ensure continuity of your mission critical applications

Security

Enhance security to protect your deployments from potential security threats

Performance

Boost performance to make the most of your Azure resources

Cost

Optimize your Azure resource cost to get more from your IT budget

Improve resource availability

Microsoft Azure Advisor recommendations

ALL 10 HIGH AVAILABILITY 6 SECURITY 1 PERFORMANCE 1 COST 2

Increase the stability and availability of your Azure resources with these recommendations. [Learn more](#)

Subscriptions: Contoso subscription (1 Azure Subscription ID x)

Resource groups: All resource groups

Active or snoozed: Active

Get recommendations

Active recommendations

IMPACT	DESCRIPTION	RESOURCES	UPDATED AT
Medium	This availability set is not configured for fault tolerance To ensure high availability add one or more virtual machines to this availability set	2 Availability sets (classic)	3/28/2017 2:59:08 PM
Medium	This virtual machine is not configured for fault tolerance For virtual machine redundancy, use availability sets	1 Virtual machine	3/28/2017 2:59:15 PM
Medium	Improve the fault tolerance of your application gateway For application gateway redundancy, use two or more medium or large instances	3 Application gateways	3/28/2017 2:59:15 PM
Medium	This virtual machine is not configured for fault tolerance For virtual machine redundancy, use availability sets	1 Virtual machine (classic)	3/28/2017 2:59:09 PM
Medium	Improve the reliability of your virtual machine disks Upgrade to Premium Disks	2 Virtual machines (classic)	3/28/2017 2:59:15 PM
Medium	Improve the reliability of your virtual machine disks Upgrade to Premium Disks	2 Virtual machines	3/28/2017 2:59:15 PM

Contoso subscription (1 Azure Subscription ID x)

Recommendation details:

Snooze

Group two or more virtual machines in an availability set to ensure at least one virtual machine is available during an outage.

[Learn more](#)

IMPACT: Medium

UNIT REVIEWED: 1/VM/2017 2:59:15 PM

RESOURCE: [availability](#)

Recommended actions:

Choose one of these actions:

- [Move the virtual machine into a new availability set](#)
- [Move the virtual machine into an existing availability set](#)

Advisor identifies virtual machines that are not configured to meet the current Azure SLA

Recommendations with "inline actions" empower you to address potential issues within Advisor itself

Boost Application performance

Preview Microsoft Azure Advisor recommendations

Advisor recommendations PREVIEW

ALL 9 HIGH AVAILABILITY 4 SECURITY 1 PERFORMANCE 2 COST 2

Increase the performance and scalability of your Azure resources with these recommendations. [Learn more](#)

Subscriptions: Microsoft Azure Internal Consumption Resource groups: All resource groups Active or snoozed: Active

Get recommendations

Active recommendations

Microsoft Azure Internal Consumption

IMPACT	DESCRIPTION	RESOURCE	UPDATED AT
High	Improve the performance of your SQL Azure database Follow the recommendations from SQL DB Advisor	3 SQL databases	12/12/2016 11:16:21 AM
Medium	Improve the performance and reliability of your App Service Follow the recommendations from App Service Advisor	1 App service	12/12/2016 11:16:25 AM

Enhance System Security

Preview

Microsoft Azure

Advisor recommendations

Report a bug

Search

Advisor recommendations

PREVIEW

ALL

9

HIGH AVAILABILITY

6

SECURITY


1

PERFORMANCE

0

COST

2



Advisor gets your security recommendations from [Azure Security Center](#). Security Center will help you monitor the security status of all your resources in a single place. It will also alert you when you're being attacked.

Subscriptions

Azure Supportability Demo Account One

Get recommendations














Active recommendations

Azure Supportability Demo Account One

IMPACT	DESCRIPTION	RECOMMENDATIONS	UPDATED AT
High	Improve the security of your Azure resources Follow Security Center recommendations	13 Recommendations	12/12/2016 12:17:47 PM

Recommendations

Filter

DESCRIPTION ^	RESOURCE ^	STATE ^	SEVERITY ^	
Enable advanced security for subscrip...	1 subscriptions	Open	 High	...
Enable VM Agent	vmwindows	Open	 High	...
Install Endpoint Protection	2 virtual mac...	Open	 High	...
Add a Next Generation Firewall	4 endpoints	Open	 High	...
Enable Network Security Groups on sub...	3 subnets	Open	 High	...
Enable Network Security Groups on virt...	SIAMSetVM	Open	 High	...
Enable Auditing & Threat detection on...	advisorserver	Open	 High	...
Enable Auditing & Threat detection on...	3 SQL datab...	Open	 High	...
Apply disk encryption	vmlinux	Open	 High	...
Restrict access through Internet facing...	3 virtual mac...	Open	 Medium	...
Enable Transparent Data Encryption	3 SQL datab...	Open	 Medium	...
Provide security contact details	1 subscriptions	Open	 Medium	...
Remediate OS vulnerabilities (by Micros...	vmlinux	Open	 Low	...

Advisor integrates with Azure Security Center to bring you security recommendations

Optimize your Azure cost

The screenshot displays the Microsoft Azure portal's Advisor Recommendations section. The top navigation bar includes 'Microsoft Azure', 'Advisor recommendations', and 'Recommendation'. A search bar and user profile are also visible. The main content area is divided into several sections:

- Summary Cards:** At the top, there are five cards representing different recommendation categories: ALL (11), HIGH AVAILABILITY (7), SECURITY (1), PERFORMANCE (1), and COST (2).
- Filters:** Below the summary cards, there are filters for Subscriptions (Contoso subscription), Resource groups (All resource groups), and Active or snoozed (Active).
- Get recommendations:** A blue button to refresh the recommendations.
- Active recommendations:** A table listing active recommendations. The table has columns for IMPACT, DESCRIPTION, RESOURCE, and UPDATED AT.
- Recommendation Detail Panel:** On the right, a detailed view of a recommendation is shown, including a description, impact, last refreshed date, and potential monthly savings.

IMPACT	DESCRIPTION	RESOURCE	UPDATED AT
High	Use a cost effective solution to manage the performance goals of multiple SQL databases Create recommended elastic database pools	1 SQL server	3/22/2017 3:02:56 PM
High	Your virtual machine has low usage To lower your cost, shut down or resize your virtual machine	1 Virtual machine (classic)	3/22/2017 3:03:01 PM

Recommendation Detail Panel:

- Snooze:** A button to snooze the recommendation.
- Description:** We've analyzed the usage patterns of your virtual machine over the past 14 days. During that time, the average CPU utilization was less than 5% and network I/O was less than 7MB for 4 or more days. While certain scenarios can result in low utilization by design, you can often save money by managing the size and number of virtual machines.
- Learn more:** A link to learn more about the recommendation.
- IMPACT:** High
- LAST REFRESHED:** 3/22/2017 3:03:01 PM
- RESOURCE:** [vm2017grendok](#)
- Potential Monthly Savings:** 245.52* USD
- *You can save up to the stated amount if you choose to shut down the virtual machine. Your actual savings may vary.**
- Recommended actions:** Choose one of these actions:
 - [Shut down the virtual machine](#)
 - [Resize the virtual machine](#)

Advisor detects low utilization virtual machines

...and calculates your potential savings if you apply the recommendation

Cost Analysis

What is Azure Cost Management?

A multi-cloud cost management and optimization tool

Available to Azure EA customers and CSPs today



With Azure Cost Management, you can:



Monitor cloud spend

- ➔ Visualize data in consolidated and custom views
- ➔ Track usage and cost trends
- ➔ Detect spend anomalies and usage inefficiencies
- ➔ Forecast future spend based on historical data



Drive organizational accountability

- ➔ Allocate usage and costs using resource tags
- ➔ Produce chargeback and showback reports
- ➔ Let teams access data and insights with Role-Based Access Control
- ➔ Alert stakeholders automatically for spend anomalies and overspending risks



Optimize cloud efficiency

- ➔ Increase resource utilization with virtual machine right-sizing
- ➔ Eliminate idle resources
- ➔ Improve Reserved Instance management

Search (Ctrl+J)

Save Save as Delete view Share Refresh Export Settings

How satisfied are you with cost analysis? →

Scope : Contoso (Demo)

Accumulated costs

Oct 2019

Add filter

ACTUAL COST (USD)

\$54,015.90

FORECAST: CHART VIEW ON

\$80,301.76

BUDGET: AAA

\$10 /mo

Group by: None

Granularity: Accumulated

Area



Service name



virtual machines
\$18,816....
azure stack
\$7,546.35
expressroute
\$4,406.20
storage
\$3,896.52
hdinsight
\$3,346.15
azure app service

Location



br south
\$11,643....
azure stack
\$7,546.35
us west
\$7,291.11
eu west
\$5,720.54
us central
\$4,743.78
fr central

Enrollment account name



acm team
\$32,882....
azure stack team
\$7,639.90
vdc
\$4,623.20
m2-accat
\$2,513.45
azureops admin
\$2,012.38
towboat team

