Panasonic Cloud Service Toolkit (CST) Enterprise IoT Cloud Cost Comparison for One Million IoT Devices

July 5, 2017

Executive Summary

We compare the operating cost for an IoT cloud running on Panasonic's Cloud Service Toolkit (CST) vs major competitors including Amazon, Microsoft and IBM.

In our Cloud Service Toolkit (CST) one million device test, half the devices send a message every minute to a counterpart device or approximately 21,900 messages per month per device and a monthly grand total of 21,900,000,000 messages (nearly 22 billion messages per month).

In this comparison, we used the most expensive pricing for the CST including CST software licensing, enterprise level support and AWS instances, so the price could be reduced even further. This comparison shows that the CST costs dramatically less than AWS IoT, Microsoft Azure IoT Hub, and IBM Bluemix IoT Platform in this case.

IoT Platform	Monthly Cost	Annual Cost
Panasonic Cloud Service Toolkit (CST)	$4,190.33	$50,284
Amazon AWS IoT	$109,500	$1,314,000
Microsoft Azure IoT Hub	$62,000	$744,000
IBM Bluemix IoT Platform	$51,838	$622,056

<div style="border:1px solid black; text-align:center;">

96% savings over Amazon

93% savings over Microsoft

92% savings over IBM

</div>

Panasonic Cloud Service Toolkit (CST) Cost

The CST million device test required 35 AWS m3.large instances, 20 of which ran CST code requiring a license, the others ran Cassandra as a back end. Using on-demand pricing, the highest type of pricing (On Demand), an m4.large instance costs $0.1 per hour or approximately $72 per month (using 720 hours per month). See https://aws.amazon.com/ec2/pricing/. This puts the total hardware cost at $2,520 per month ($72 * 35 machines). Bandwidth adds $337 per month (2592 GB of traffic). CST licensing fees is $500 per core per year after the first 8 which are free (https://cstkit.com/license/). Each m4.large node has 2 cores, so the test used 40 licensed cores for yearly license fee of $500 * (40-8) = $16,000. This is $1,333.33 monthly.

Total monthly cost is:

AWS EC2 Instance:	$2,520.00
AWS bandwidth:	$337.00
CST License:	$1,333.33
Total:	$4,190.33

Monthly price **per device: $0.0042 (less than half a penny)** – Annual price per device: $0.05 (five cents)

Monthly total price for **1 million devices: $4,190.33**

Adding CST Enterprise Level Support

Customers may optionally add Panasonic's enterprise CST support at a cost of $500 annually per core. For the 40 cores in this test, that would add an annual cost of $20,000 or $1,666.67 per month.

Total monthly cost **including enterprise level support: $ 5,857**.

Monthly price **per device including enterprise level support: $0.006 (6/10 of a penny)**, Annual price per device: $0.07 (seven cents)

Amazon AWS IoT Cost

Bottom line: using the CST results in a 96% savings over using Amazon's AWS IoT.

AWS IoT Pricing

AWS IoT Pricing is $5 per million messages (depending on region, $8 per million in Tokyo). Each message is capped at 512 bytes. See https://aws.amazon.com/iot/pricing/

Monthly price **per device: $0.11 (about 11 cents)** – Annual price per device: $1.32

Monthly total price for **1 million devices: $109,500**

Amazon AWS Iot Price per month is $109,500 vs $6,689 for the CST.

Microsoft Azure Iot Hub Cost

Bottom line: using the CST results in a 93% savings over using Microsoft's Azure IoT Hub.

Azure IoT Hub Pricing

Microsoft Azure IoT Hub is priced at $500 per month for every 6 million messages a day. See
https://azure.microsoft.com/en-us/pricing/details/iot-hub/ .

In the test scenario, there were approximately 730 million messages per day, requiring 122 Azure IoT hubs to handle. This puts the cost at $30,500 per month (122 * $500).

Monthly price **per device: $0.061 (six cents)** – Annual price per device: $0.73 (73 cents)

Monthly total price for **1 million devices: $61,000.**

Microsoft Azure IoT Hub price per month is $61,000 vs $5,857 for the CST.

IBM Bluemix IoT Platform Cost

Bottom line: using the CST results in a 92% savings over using IBM Bluemix IoT Platform.

IBM Bluemix IoT Platform Pricing

IBM Bluemix IoT is priced monthly at $0.02 USD / megabytes exchanged after the first 100MB which are free. See
https://console.ng.bluemix.net/?direct=classic/#/pricing/cloudOEPaneId=pricing&paneId=pricingSheet.

In the test scenario, there were 2592 GB exchanged per month. This puts the cost at $51,838 per month ((2,592,000 – 100) * $0.02).

Monthly price **per device: $0.052 (about five cents)** – Annual price per device: $0.62 (sixty two cents)

Monthly total price for **1 million devices: $51,838**

IBM Bluemix IoT Platform price per month is $51,838 vs $5,857 for the CST.