

During 2019, \$27.5 million, or 13% of total revenue, was generated from EMEA, which remained relatively constant compared to 2018.

2018 Revenue Compared to 2017 Revenue

Total revenue decreased \$3.2 million, or 1%, in 2018 compared to 2017. This decrease was due to a \$5.2 million decrease in products revenue, partially offset by a \$2.0 million increase in services revenue. The decrease in products revenue was primarily driven by lower demand from our service provider customers in the Americas. Revenues from service provider customers decreased 10% in 2018 compared to 2017. Revenue from enterprise customers remained relatively constant in 2018 compared to 2017.

Products revenue decreased \$5.2 million, or 3%, in 2018 compared to 2017, primarily driven by lower demand from our service provider customers in the Americas, as well as decreases from EMEA, offset in part by a \$2.6 million increase from the adoption of ASC 606 in 2018 and by the increase in products revenue primarily from Japan and Asia Pacific. See Note 2 of the Notes to Consolidated Financial Statements in Part II, Item 8 of this report for additional information related to our adoption of ASC 606.

Services revenue increased \$2.0 million, or 2%, in 2018 compared to 2017. The increase was primarily attributable to the increase in PCS sales in connection with our increased installed customer base.

During 2018, \$112.5 million, or 48%, of total revenue was generated from the Americas, which represents a 8% decrease compared to 2017. The decrease was primarily due to lower products revenue driven by lower demand from our service providers in the Americas.

During 2018, \$55.2 million, or 24%, of total revenue was generated from Japan, which represents a 7% increase in revenue compared to 2017. The increase was mainly due to higher product revenues driven by higher demand from our service providers in Japan.

During 2018, \$36.9 million, or 16%, of total revenue was generated from the Asia Pacific regions excluding Japan, which represents a 11% increase compared to 2017. The increase was driven primarily by higher products revenue as well as higher services revenue from PCS sales in connection with our increased installed customer base.

During 2018, \$27.6 million, or 12%, of total revenue was generated from EMEA, which remained relatively consistent from 2017.

Cost of Revenue, Gross Profit and Gross Margin

Cost of revenue

Cost of products revenue is primarily comprised of cost of third-party manufacturing services and cost of inventory for the hardware component of our products. Cost of products revenue also includes warehouse personnel costs, shipping costs, inventory write-downs, certain allocated facilities and information technology infrastructure costs, and expenses associated with logistics and quality control.

Cost of services revenue is primarily comprised of personnel costs for our technical support, training and professional service teams. Cost of services revenue also includes the costs of inventory used to provide hardware replacements to end- customers under PCS contracts and certain allocated facilities and information technology infrastructure costs.

A summary of our cost of revenue is as follows (dollars in thousands):

	<u>Years Ended December 31,</u>		<u>Increase (Decrease)</u>	
	<u>2019</u>	<u>2018</u>	<u>Amount</u>	<u>Percent</u>
Cost of revenue:				
Products	\$29,816	\$34,066	\$(4,250)	(12)%
Services	<u>19,065</u>	<u>17,830</u>	<u>1,235</u>	7%
Total cost of revenue.	<u>\$48,881</u>	<u>\$51,896</u>	<u>\$(3,015)</u>	(6)%