SONOS

SITUATION
Sonos is the leading manufacturer of wireless music systems. The smart speaker system lets listeners stream all the music on earth wirelessly, in any or every room of the home with control from any wifi-enabled device. The system enables listeners to play not only their personal digital music collection, but gives them access to millions of songs and thousands of radio stations by partnering with the leading online music streaming services. With more and more wireless devices fighting for bandwidth in the home, Sonos wanted to take proactive steps to ensure the company continued to deliver on its promise of Rock Solid Wireless.

TASK
Use various system diagnostics and Wi-Fi metrics to develop a data model that would predict when a given Sonos system is likely to experience a drop in audio quality as a result of network problems upstream, so that Sonos could proactively provide customers with a diagnosis and solution to the problem.

PYTHIAN'S ADVANCED ANALYTICS EXPERTISE PROVIDED SONOS A MODEL TO PROACTIVELY PRODUCE ADDITIONAL CUSTOMER VALUE

Sonos is the leading manufacturer of the smart speaker system that streams personal digital libraries and online streaming music that users can control through any internet-enabled device. The inherent unpredictability of home internet networks, as well as the ambient environment in which their speakers live, means that there are instances in which customers will experience drops in audio connections, degrading the listening experience. Imagine listening to your favourite song only to have it pause unexpectedly; we've all experienced it -- that annoying buffering while the network tries to resolve problems and re-establish a connection with its host.

If Sonos could predict the conditions under which a given device will have a drop in audio quality, solutions could be developed that would guide the user through troubleshooting steps to resolve the most common issues on their own—for example, rebooting the router or changing wireless channel. The Sonos user experience would be improved, and calls to the support center would be reduced, significantly lowering overall support costs while at the same time improving customer satisfaction.

SONOS

ACTION
Create a proof-of-concept (PoC) solution with a data model for predicting streaming issues on Sonos devices.

RESULTS
Pythian built a set of PoC data models using anonymized diagnostic data from connected Sonos devices that can predict drop-outs at an accuracy of 56%, while keeping the false positive rate at just 6%. Catching these drop-offs, which are typically caused by busy or crowded home networks, before they happen can ensure an epic listening experience for Sonos owners, and up to 60% fewer calls to the support centre for this issue.

UNDERSTANDING THE DATA

Sonos wanted to know if they could predict audio drop offs by examining various Wi-Fi metrics collected from the Sonos devices. Sonos turned to Pythian's data science team to discover whether the diagnostic data Sonos was collecting from the devices included the right data to build the predictive model.

Pythian developed a proof-of-concept (PoC) modeling environment to assess the data. After analyzing and experimenting with dozens of metrics to determine which ones were the best predictors of potential audio drop-offs, the team selected the best features for use in the predictive model.

The Sonos data was stored in an cloud environment, so Pythian worked closely with the cloud provider to fully leverage the machine learning features to develop the model. A data pipeline was created, transformed using Hive, and finally saved to blob storage. The predictive pipeline was then built in the cloud fetching data directly from the blob storage.

REAL-WORLD RESULTS

The Pythian advanced analytics team developed a model using diagnostic data from connected Sonos devices such as packet send attempts, physical errors and latency. This model successfully predicted 56% of audio interruptions while keeping the false positive rates to a low 6%. The cost-savings analysis showed that by applying the model, Sonos could reduce the number of support center calls for this issue by 60%--which could lead to significant savings in monthly support costs.

ABOUT PYTHIAN
Pythian is a global leader in data consulting and managed services. Since 1997, we have specialized in planning, deploying, and managing business-critical data systems for large and mid-market enterprises. Learn more about Pythian and its elite teams of data experts at www.pythian.com.

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