



## Combinatorial Auction Provider Scales Up Quickly, Saves Costs with Cloud Services

### Overview

**Country or Region:** Australia

**Industry:** Media and entertainment—Advertising

### Customer Profile

Based in Melbourne, Australia, Tradeslot and Adslot bring business-to-business buyers and sellers together through their large scale combinatorial auction platform. They employ 10 people.

### Business Situation

Tradeslot and Adslot sought a solution that would enable them to scale up quickly, reduce capital expenditures for customers, and provide the compute power required for complex algorithms.

### Solution

After evaluating other possibilities, Tradeslot and Adslot chose to use a cloud computing model and developed solutions on Windows Azure™.

### Benefits

- Reduced capital costs—U.S.\$60,000 to \$1,000
- Improved ability to scale up
- Improved services for customers
- Saved IT resources
- Delivered trustworthy solution

“With Windows Azure, we’ve reduced ... capital expenditures from \$60,000 to \$1,000. This significantly lowers the barrier for new customers and makes our services more enticing.”

Anthony Du Preez, Founder, Tradeslot and Adslot

Tradeslot specializes in designing and building large scale business-to-business and government-to-business (G2B) auctions platforms; its partner company, Adslot, uses the same auction platform to auction online advertising space. The companies use computation-heavy combinatorial auction algorithms to manage their complex conditional bid processes. However, with a lack of compute power with its existing infrastructure, the companies found it necessary to manually add constraints to auctions. In addition, the companies wanted to reduce capital costs and IT resources required to set up new server hardware for customers. Tradeslot and Adslot implemented [Windows Azure™](#) and, as a result, reduced capital costs for customers—from U.S.\$60,000 to only \$1,000 for each customer, improved their ability to scale up and improve services for customers, saved critical IT resources, and delivered a solution their customers can trust.



## Situation

Based in Australia and formed in 2005, Tradeslot designs and builds large scale business-to-business and government-to-business auction platforms. The company has three main areas of focus: port and freight capacity, industrial commodities, and environmental commodities. One of its largest customers is Consolidated Bulk Handling, which uses the Tradeslot auction platform to auction port capacity for the 10-million ton West Australian wheat export. Tradeslot also designed the Australian government carbon permit auction platform and has facilitated more than U.S.\$400 million in forest timber transactions.

Unlike traditional price-only auctions that are one-dimensional, the Tradeslot combinatorial auction platform allows bidders to place expressive bids—critical for effective business-to-business transactions. For instance, bidders can place price bids with non-price conditions, such as terms of trade, volume, and unique lot packages. In addition, the seller can add award constraints and factor the bids based on qualitative factors. Tradeslot uses large scale “combinatorial auctioning”—a complicated process that uses complex mathematical algorithms and requires significant computational resources.

With its tremendous success in combinatorial auctioning for port and freight capacity, environmental commodities, and industrial commodities, Tradeslot formed a partner company in 2007, Adslot. Using the same intellectual property and technologies as the Tradeslot auctioning platform, Adslot is a foray into the advertising sales process—enabling media publishers to sell premium ad inventory to agencies and self-serve advertisers using its proprietary ‘book&bid’ process. Though Adslot is currently

targeted at online media, the company plans to apply its concepts and technology to traditional media, such as television and radio.

The Tradeslot and Adslot auctioning platforms are built on the Microsoft® .NET Framework 3.5 and use the Windows Server® 2003 operating system and Microsoft SQL Server® 2005 data management software. For each of its customers, Tradeslot and Adslot had to set up servers and hosting environments to run the auctions—often at a frantic pace. Setting up an auction with new servers often took up to two months. For these small companies, with only 10 employees between Tradeslot and Adslot, this was also a strain on personnel resources.

In addition, the hardware cost of setting up an auction for the first time is often a barrier for customers. Costs associated with initial hardware setup and hosting fees could reach U.S.\$60,000 in some cases, depending on the auction. “We have cases where customers say they’re prepared to try our service and we have to tell them that they have to set up an entire infrastructure to handle their auction,” says Anthony Du Preez, Founder, Tradeslot and Adslot. “It’s hard for them to dip their toe in the water.” Not only are some customers hesitant to use Tradeslot and Adslot for the first time because of the often costly capital expenditures, for some customers, whose auctions only run on a quarterly basis for two weeks, server investments are under-utilized for months at a time.

The Tradeslot and Adslot auction platforms were limited by the scalability of the hardware. In some cases, the companies had to restrict the use of complex mathematical algorithms that require compute-intensive processes and that allow highly expressive auction

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functionality. “We had to put manual constraints on some of our auctions and limit how sellers could sell and how bidders could bid,” explains Du Preez. “That has a significant impact on bidding flexibility which is the driving factor for increased revenue and cost reduction.”

Tradeslot and Adslot needed a solution that would provide the compute processing power it required to run its auctions without bid constraints in an effort to optimize results for its customers. In addition, the companies wanted a solution that they could scale quickly without putting a strain on precious IT resources, and that would also require less capital expenditure for customers.

### Solution

As Tradeslot and Adslot continued to identify unique market opportunities to extend the auction platform to other industries, the companies chose to move to a cloud solution—hosting and managing their Web applications and services on the Internet through data centers. After comparing other cloud solutions, such as Amazon Elastic Cloud Computing (EC2), the companies chose Windows Azure™, a solution that provides application hosting by Microsoft and that is designed for high availability and powerful scaling to match usage needs.

The companies chose Windows Azure, in part, because developers can use their existing skills to develop new solutions with technologies and tools they are already familiar with, such as the .NET Framework 3.5 and the Microsoft Visual Studio® 2008 Professional Edition development system. In addition, Tradeslot and Adslot found Amazon EC2 to be far more complicated and time consuming to develop on than Windows Azure. “One of the key benefits of Windows Azure from a development

perspective is that the roles—such as Web roles and worker roles—are already defined,” explains Michael Hart, System Architect and Developer Lead at Tradeslot and Adslot. “With Amazon EC2, you’re basically starting from scratch.”

In addition, by continuing to use Microsoft products and technologies, Tradeslot and Adslot can grow and scale their technology infrastructure with ease of deployment across complementary products.

Adslot is developing three distinct solutions on Windows Azure using its proprietary combinatorial auction technology:

- Classified ad sales solution. This solution is an automated auction-based platform that enables classified publishers, such as ads for automobiles, jobs, real estate, and travel, to sell search keywords for online advertising.
- Display ad sales solution. This solution allows a general display ad publisher to engage the buyers with two types of dynamic pricing: dynamic rate cards, where the fixed price varies on real-time demand projections, and ‘book&bid,’ where ad buyers can buy at a fixed price and bid for additional inventory.
- Video/television ad sales solution. This solution is an automated auction-based sales platform that enables television networks to sell ad spots in broadcast on online television shows.

Adslot uses worker roles to host and scale the compute-heavy combinatorial algorithms used in their auction platform, as well as for managing a number of additional auction processes, such as sending e-mail or Short Message Service messages.

Figure 1. Carsales application, powered by Windows Azure.

Windows Azure Web Roles are used for hosting Adslot's customer-facing web applications.

To manage application data, Adslot uses Windows Azure Tables, Blob Storage, and Queue service. In addition, Adslot is evaluating Microsoft SQL Azure™ for adding relational and transactional storage capabilities in the future.

Adslot has designed its solution to horizontally scale, allowing auction workloads to be broadly distributed across a number of Windows Azure instances. This means the solution can easily accommodate more users than was previously the case. "As the needs come up, we can add more servers and more roles in Windows Azure and take advantage of on-demand scaling to accommodate heavy usage," explains Hart. Adslot ran simulations of its platform where it used 7,000 lots for bid and 4,000 bidders. It used 120 worker roles and had all 4,000 users bid on 20 lots at one time—putting

maximum load on the system. "What we found is that we're able to handle that capacity better on Windows Azure than our previous infrastructure," continues Hart.

Tradeslot and Adslot will continue to develop solutions and expand their market reach, adapting their auction platform for other industries—something that was difficult to achieve prior to implementing Windows Azure.

### Benefits

As a result of implementing Windows Azure, Tradeslot and Adslot can efficiently implement a scalable solution for their auction platform. The companies decreased the capital expenditures required to set up an auction, which lowered the entry-barrier for new customers. Tradeslot and Adslot can quickly scale up the solutions and extend service offerings to customers, while also improving services with the powerful compute and storage resources offered by Windows Azure. At the same time, the lean IT department is free to focus on more strategic tasks, thanks to enterprise-class service from Microsoft, and the company can focus on delivering new services instead of managing IT infrastructure.

### Reduced Capital Costs, Lowered Barrier for New Customers

By implementing Windows Azure, Tradeslot and Adslot have eliminated the need to procure, set up, and configure new servers, as well as the need to arrange for hosting services for new customers. Instead, the companies can rely on data centers hosted by Microsoft. Previously, it cost up to U.S.\$60,000 in hardware, licensing, and hosting costs to set up a new auction—a cost that is passed on to customers without a margin for Tradeslot and Adslot. "With Windows Azure, we've reduced those capital expenditures from \$60,000 to \$1,000," says Du Preez. "This significantly

The screenshot shows the Carsales.com.au website interface. At the top, there is a navigation bar with 'Home', 'Account', and 'Help' links. Below the navigation bar, there are filters for 'Buy All', 'Clear All', 'Discount', 'Term', and 'Type'. The main content area displays a table of auction listings for Audi vehicles. The table includes columns for Make, Model, Inventory, Term, Unit, Book, Discount, Price, Status, and Current Spend. The listings show various Audi models (a3, a4, a5, a6, a8, allroad, q5, q7, r8, rs6) with an inventory of 800,000, a term of 12M, and a unit of Both. The price for each vehicle is \$52.50, and the status is indicated by a red dot. The current spend is \$0.00 for all vehicles.

Make	Model	Inventory	Term	Unit	Book	Discount	Price	Status	Current Spend
audi	a3	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	a4	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	a5	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	a6	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	a8	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	allroad	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	q5	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	q7	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	r8	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00
audi	rs6	800,000	12M	Both		25.00%	\$ 52.50	<span style="color: red;">●</span>	\$0.00

At the bottom of the page, there is a footer with the Carsales.com.au logo, navigation links (About, Contact Us, Advertise With Us, Carsales Directory), and the Adslot logo. The footer also includes the text "© Carsales Pty Ltd - All rights reserved".

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lowers the barrier for new customers and makes our services more enticing.”

#### **Improved Ability to Scale Up and Extend Service Offerings**

Tradeslot and Adslot are always looking for new opportunities to extend their auction platform to new markets. With Windows Azure, the companies can take their intellectual property and adapt their auction platform to new industries, new commodities, and new geographies using existing infrastructure. “Windows Azure gives us the ability to chase new deals with the rock-solid technology infrastructure in place already,” explains Du Preez. “We can quickly scale up and service customers around the world with a single infrastructure.”

#### **Improved Services for Customers with Powerful Computing**

The mathematical algorithms that the auction platform uses are complex and require significant compute and storage resources—sometimes beyond what its previous infrastructure could manage. As a result, Tradeslot and Adslot had to manually add constraints to its auction systems, limiting some of their functionality. With the powerful processing capability of Windows Azure, Tradeslot and Adslot can set up auctions for its customers without constraints, creating highly expressive combinatorial auctions to better meet customers’ needs.

In addition, the companies can add new services to its robust offering, thanks to the CPU and storage power offered by Windows Azure. “The power of Windows Azure gives us the ability to do things that we could only do with a significant investment in building and managing our own data center, such as data mining and business intelligence,” says Du Preez. “We see this as a wonderful growth opportunity

for our business and what we’re able to offer customers.”

#### **Saved Critical IT Resources**

Tradeslot and Adslot run lean operations—only 10 employees—and efficiency is critical to success. With Windows Azure, the companies are able to streamline management of the IT infrastructure that supports their auction platform, and do not have to expend critical IT resources on setting up and managing a server environment for each customer. “All of the work that goes into setting up an auction—buying, configuring, and maintaining hardware—is huge overhead for us,” says Hart. “What used to take two months to set up can now be done in only one week and we can use those precious IT resources to focus on more strategic tasks, such as developing new services.”

#### **Delivered a Trustworthy Solution**

Because Tradeslot and Adslot work with government agencies and large enterprises, having a reliable solution that its customers could trust was a key concern for the companies. By using Windows Azure, with hosting provided by Microsoft data centers, Tradeslot and Adslot have the enterprise-class service they need and the confidence of working with a partner that has deep expertise in online services. “We win business because of our business-to-business auction expertise, and because we have the most capable solution available,” explains Du Preez. “Then, we have to prove that we can deliver the scalability that large businesses need—that’s not always easy as a relatively small company. But with Windows Azure, we have the credibility that comes with the Microsoft brand and customers just know that it’s going to work.”

## For More Information

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495. Customers in the United States and Canada who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to:

[www.microsoft.com](http://www.microsoft.com)

For more information about Tradeslot and Adslot products and services, call (61) 3 9621 1511 or visit the Web sites at:

[www.tradeslot.com](http://www.tradeslot.com) or

[www.adslot.com](http://www.adslot.com)

Additional Resources:

Download: [Windows Azure Platform Training Kit](#)

View: [Architecting and Developing for Windows Azure](#)

## Windows Azure Platform

The Windows Azure platform provides an excellent foundation for expanding online product and service offerings. The main components include:

- **Windows Azure.** Windows Azure is the development, service hosting, and service management environment for the Windows Azure platform. Windows Azure provides developers with on-demand compute and storage to host, scale, and manage Web applications on the Internet through Microsoft data centers. In addition, Windows Azure serves developers' connectivity needs through the following services.
  - › The **Service Bus** connects services and applications across network boundaries to help developers build distributed applications.
  - › The **Access Control Service** provides federated, claims-based access control for REST Web services.
- **Microsoft SQL Azure.** Microsoft SQL Azure offers the first cloud-based relational and self-managed database service built on Microsoft SQL Server 2008 technologies.

To learn more about the Windows Azure platform, visit:

[www.windowsazure.com](http://www.windowsazure.com)

### Software and Services

- Windows Azure Platform
  - Windows Azure
  - Microsoft SQL Azure
- Technologies
  - Microsoft .NET Framework 3.5
- Microsoft Visual Studio
  - Microsoft Visual Studio 2008 Professional Edition
- Microsoft Server Product Portfolio
  - Windows Server 2003 Enterprise Edition
  - Microsoft SQL Server 2005 Enterprise Edition
- 'Solutions'
  - Software-plus-services