

INTEL® E-BUSINESS CASE STUDY

*Survivor** Australia challenges its real-time digital editing network to be the “Ultimate Survivor.”*

End-to-end Intel® Gigabit Solutions enable production staff to digitize, transfer files, and collaborate online in real time – on location and in the studio.

Intel® PRO
Network Connections

CASE HIGHLIGHTS

Profiled Organization: Broadcast Television Station

The Challenge: Build a fail-proof, high-bandwidth network for collaborative, real-time broadcast production.

The Solution: Design the whole network on Intel® Gigabit technology for superior reliability and performance. Products selected included: Intel® Pentium® III Xeon™ 1 Gigahertz Processors, Intel® PRO/1000 XT Server Adapters, Intel® PRO/1000 T Desktop and Server Adapters, Intel® NetStructure™ 480T Routing Switch, and Intel® NetStructure™ 470T Switch.

Benefits: Flawless network performance allows real-time production. Productivity has been enhanced by the ability to collaborate and share files in real time.

SUMMARY

*Survivor** is a reality-based television game show that challenges 16 complete strangers to both cooperate and compete in a grueling 39-day endurance contest. In an isolated corner of the Australian wilderness, these contestants must “outwit, outlast and outplay”** each other in an effort to become the “Ultimate Survivor.”* Every three days, the contestants vote to eliminate one of their own. This case study looks at the unique production and networking requirements of the all-new, locally produced, all-Australian version of the popular American *Survivor* series.

Survivor Australia’s producers demanded no less than fail-proof performance from their real-time digital editing network. Even though the network had to handle extremely high-bandwidth traffic and support simultaneous online editing and production, producers expected flawless operation. *Survivor*’s game play couldn’t stop for technical difficulties, so the network simply had to work. Facing the ultimate challenge, the operations crew turned to Intel® Gigabit Solutions. Using a powerful array of Intel® PRO Gigabit Adapters, Intel® Gigahertz Processors, and Intel® Gigabit Switches, reseller Don Dennis delivered the most exciting network he’s ever built. This is the story of how the all-Intel network became the ultimate *Survivor*.

CHALLENGE: Build a fail-proof, high-bandwidth network capable of real-time file transfer and sharing.

When Australia’s Channel 9 decided to create a local version of *Survivor*, producers mapped out a daunting production plan. The show would be filmed at the remote location using 12 cameras. At the end of each day, the footage from each of the 12 cameras would be digitized and then reviewed by the show’s producers. While watching the raw footage, producers would create clips

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“The full network has become the ultimate *Survivor*, performing flawlessly, and meeting – even exceeding – all expectations.”

Don Dennis
Technical Operations Manager,
Survivor Australia

of the best shots and attach digital shot notes. Ideally, all of the raw footage and the shot notes could be viewed by all of the producers and editors from any station simultaneously without interrupting workflow.

After seeing this plan, the show’s Executive Producer realized he would need a whole new, digital editing network to achieve these results. Existing equipment simply wasn’t adequate to support this kind of production. The production plan translated into an extensive list of requirements for the new network. For starters, *Survivor*’s format required production and editing capabilities both on location and in the studio. So the network had to be portable. The “game” would be played live over 39 days – without interruption – at an isolated and secret location. The “live” nature of the production required absolute reliability; the network had to work. Due to the remote production setting, the operations crew would have no access to technical support. Producers demanded that the new network be able to carry traffic at full broadcast quality to multiple editing, preview, and digitizing stations – simultaneously, without interrupting the workflow. The storage requirement? A full nine terabytes of broadcast-quality audio/video digital files.

PROCESS: Developing new ideas, building confidence that the solution would work. It had to.

In 15 years as a TV video specialist, Don Dennis, Broadcast Manager of Propeller Head and contracted technical operations manager for *Survivor*, had never been asked to build such a network. In fact, the request was unique for the industry – even the American *Survivor* series has not been produced with this format. Three factors made the design of this network the ultimate challenge in his career. First, the enormous amount of footage expected was highly unusual. Very few shows – ever – need to traffic and store that much material. Second, editing in a networked environment was a new concept; typical broadcast and film production occurs on stand-alone stations. Third, and probably most intimidating, was the demand for absolute reliability. “Bottom line: It had to work,” Dennis said.

Familiarity and satisfaction with other Intel® Networking Solutions, combined with the knowledge that Intel has extensive expertise in developing end-to-end Gigabit solutions, led Propeller Head to look first at Intel Gigabit Solutions. After collaborating with Intel representatives to develop a thorough network design, Propeller Head built a test network using the Intel® NetStructure™ 480T Switch and several Intel® PRO/1000 Network Adapters. “I was surprised by the test results. I got better numbers than I expected,” exclaimed Dennis. The tests went so well, in fact, that Dennis was persuaded to build the full-scale network using all-Intel technology. Although he also looked at fiber solutions, the cost savings from the Intel Gigabit solutions – combined with the performance results from the tests – “made the choice easy,” explained Dennis.

SOLUTION: Performance and reliability under the most extreme conditions

The final solution used Intel building blocks on all segments of the network. To meet the bandwidth requirements, the server and all desktops were equipped with Intel® Gigabit Ethernet Adapters, including the Intel® PRO/1000 XT Server Adapter and the Intel® PRO/1000 T Desktop Adapter. In order to guarantee reliable performance under extreme conditions,

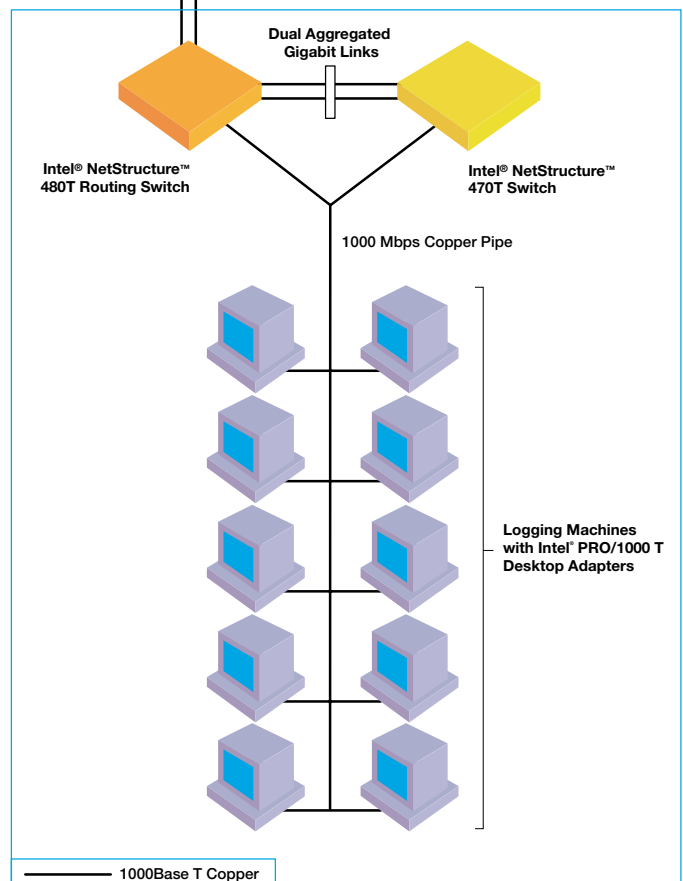
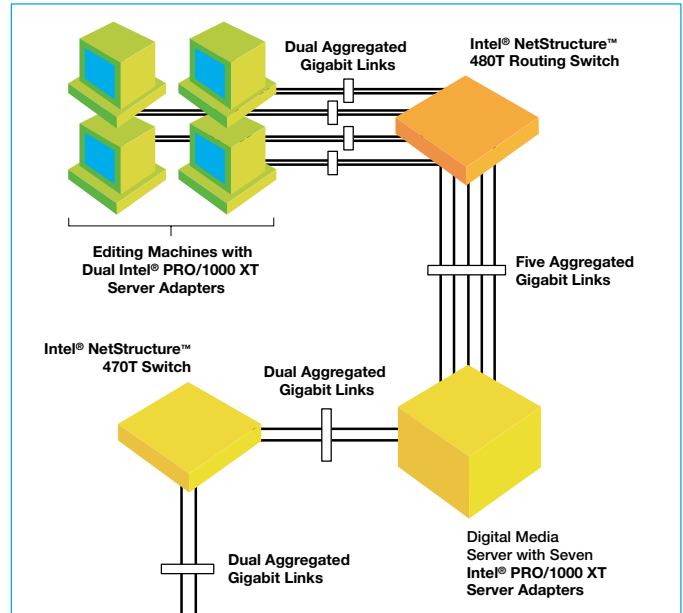
Dennis used four Intel® NetStructure™ Gigabit Switches, including the Intel® NetStructure™ 480T Routing Switch and the Intel® NetStructure™ 470T Switch.

The final network – originally set up at the remote film site, and now running flawlessly back at the station – used a core server running dual Intel® Pentium® III Xeon™ 1 Gigahertz Processors. Using the Advanced Networking Services software that is available free with all Intel® PRO Server Adapters, a total of seven Intel® PRO/1000 XT Server Adapters were installed in the server.

Using Gigabit Ether Channel technology, five of these Network Interface Cards (NICs) were “teamed” to provide 5 Gigabits of throughput to the core.

By teaming the Intel® PRO Gigabit Adapters together, *Survivor* achieved a high bandwidth, fault tolerant server. If any one of those NICS had failed – which they did not – the server would continue to operate, providing a reliable connection to the four editors’ machines. In the whole network design, meeting the bandwidth and reliability requirements were paramount. Running IEEE 802.1p QoS functions on the Intel® PRO/1000 Server Adapters ensured that all four editors received a guaranteed minimum amount of bandwidth – which is essential for any digital editing system – that allowed them to edit simultaneously without interfering with each other. The other two adapters were teamed to provide 2 Gigabits of bandwidth to the 10 logging machines

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“The team is editing flawlessly. I couldn’t ask for more.”



“The editors love it. It’s amazing. They don’t want to go back to the old way.”

that were used to view the video from each of the 1500 Beta cam videotapes shot during filming. The 10 logging machines were also equipped with Intel® PRO/1000 T Desktop Adapters to provide Gigabit connectivity to the network, allowing for high volume data transfer.

Since CAT 5 copper cabling offers easier installation and repair – especially in a remote setting – all server and desktop connections utilized CAT 5 copper cabling, thereby reducing the installation and support costs to Channel 9. To provide reliability and scalability on the network backbone, Dennis used four Intel® NetStructure Gigabit Switches, including two Intel® NetStructure 480T Routing Switches and two Intel® NetStructure 470T Switches.

As *Survivor Australia*’s technical operations manager, Dennis was given free reign to design and build the network alone. He asked for help from trusted Intel field reps in the design and test stages, and then again when he ran into unfamiliar territory during switch configuration. Since then, the full network has become the ultimate *Survivor*, performing flawlessly, and meeting – even exceeding – all expectations. The cameras created over 1500 Beta cam tapes of broadcast-quality video that was digitized and stored on the network, using a full eight terabits of storage. Editors and producers at 10 network stations can now access, review and use all 1500 tapes – simultaneously – as they create 14 exciting episodes of *Survivor Australia*. The show’s producers and editors have been especially pleased, pointing to enhanced productivity as a result of the new editing system. “They were dead-set against the idea of editing in a networked environment. But now, they absolutely love it. They don’t want to go back to the old way,” explained Dennis.

FUTURE: If *Survivor* survives, the new network will play again.

Survivor Australia airs on Australia’s Channel 9 from mid-February through May 2002. Negotiations are under way for other Australian-contestant versions of *Survivor*. The network’s flawless performance won’t be a factor in the decision to produce more shows – ultimately viewers decide whether *Survivor* has the staying power to come back and play again. However, Channel 9 will continue using its all-Intel *Survivor* network, because it’s a winner.

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