



## Small Business Case Study

Products Used: Intel® Centrino® Duo mobile technology & Intel® Pentium® 4 processor technology  
Company Size: 1-25 employees



# Mission Critical lands safely with Intel

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### Case Summary

Mission Critical Unmanned Services operates a fleet of aircraft, which survey and capture data for their customers, over remote areas of the country. Literally flying below the radar, Mission Critical offers a unique service to businesses that need to efficiently monitor remote locations on a regular basis, despite rugged geographic conditions. There's no doubt Mission Critical will always require the flexibility to go wherever clients ask. And after careful consideration, Mission Critical opted for Intel® Centrino® Duo mobile technology to keep their vehicles in the air.

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### Challenge

Companies lacking aviation experience or the appropriate technology look to Mission Critical to gather much needed data from remote locations. Since 2000, Mission Critical has been working for clients in a range of industries, such as utilities and mining, offering services like checking power lines, scouting potential mine sites safely and detecting leaks in underground pipelines. By gathering information in a safe and cost-effective manner, Mission Critical lets clients focus on data analysis and making better business decisions based on that newly captured information. With a fleet of various pilot-free vehicles, including aircraft, helicopters and a blimp, Mission Critical needed to handle any situation and location with ease and efficiency.

While on the job, Mission Critical staff work out of a recreational vehicle (RV) that acts as the company's mobile operations centre. From the ground, their expert staff (often called laptop pilots) controls the unmanned aircraft as it travels close to the ground and over long distances to capture information such as the location of fraying power lines. It's a job that requires a reliable, adaptable and mobile computing infrastructure. "In an unmanned vehicle, there is no person in the control seat guiding it along a set route. It's all done with computers," explained Sean Randle, CEO of Mission Critical Unmanned Services Ltd.



**“It never hesitates when processing large video files. This processor can handle the information better than anything we’ve seen.”**

For most companies, finding the technology that meets their business needs perfectly is a challenge. For Mission Critical, it was absolutely imperative, since without the best technology their unmanned aviation fleet would be grounded. Not only did they need to ensure flexibility and efficiency, they needed to ensure that the technology would allow them to have seamless control of their unmanned aircraft even when out of sight.

### **Solution**

Mission Critical's CEO knew that wireless was their only viable option. "We need wireless," Randle said. "If there was no wireless, we wouldn't be in business. You can't have wires going everywhere in the conditions we work under."

To satisfy their need for flexibility and top-notch technology, Mission Critical chose the Toshiba Tecra\* laptop with Intel® Centrino® Duo mobile technology. The integrated wireless LAN capability eliminates the need for cables, cards, antennas and easily connects with WIFI networks.

They now have seamless communication and the ability to transmit data between the remote RV, the on-ground pilots and the in-flight unmanned planes. Laptop pilots are in constant control of the vehicles, with altitude, speed and location readings being transmitted to the ground, along with a system that shows warnings on screen. When planes are out of sight, a radio transmitter relays information to a GPS satellite.

As the data is being collected, data from the aircraft's sensors is sent wirelessly to the laptop. To create a simultaneous back up, the laptop wirelessly copies the data to the RV's Intel® Pentium® 4 processor-based desktop computer, housed in a ruggedized case for the utmost protection.

As Randle says, "Once we connect to GPS and power up the vehicle, we are in business."

### **Key Advantages**

And Mission Critical certainly is in business. One of the key advantages of opting for the Toshiba\* laptop with Intel® Centrino® Duo mobile technology is having the ability to crunch data and transmit images at a faster rate. When compared to an earlier laptop with Intel® Centrino® mobile technology or their desktop computer, the Toshiba\* laptop crunches through data approximately 50% faster with no latency or freezing that can cause costly data failures and the need to re-fly a route.

"This laptop performs complex operations with ease. The hard drive runs through its paces silently and efficiently," says Randle. "We love it. It's a powerful machine and a powerful processor."

For Randle and his team, being able to easily receive data from the unmanned vehicle in flight, transmit the data to the RV for backup, while sending new flight co-ordinates to the vehicle is essential. This is made possible with their access to Intel's mobile-optimized, dual-core CPU which



is designed to more efficiently stream simultaneous applications. "It never hesitates when processing large video files. This processor can handle the information better than anything we've seen."

### **Checking Power Lines**

Power companies rely on Mission Critical for dependable data to give them a clear assessment of lines they cannot see. If one line goes down, it can affect an entire power grid, resulting in an expensive and aggravating situation for the power company and its clients. By thoroughly checking their client's lines, Mission Critical can help keep the power on by alerting the company to frayed or damaged lines before they break.

"We can zero in on cable and idle automatically along the line to look at specific images in detail," Randle says, boasting that they can save a company about \$8000 a day and an additional two days work, compared to the cost and time required for traditional power line flights with manned aircraft. Intel® Centrino® Duo mobile technology provides faster and more secure data transfer, eliminating loss of information that would require them to re-fly over terrain. This alone, Randle estimates, saves Mission Critical more than \$500 an hour.

Clearly Mission Critical is perfect for the job. With its small and light unmanned planes, they can safely fly very low and acquire pictures of the lines in great detail. Those images are instantly relayed to the pilot's Toshiba\* laptop on the ground. For every mile of power line they check, four to six gigabytes of data are transmitted. Clients also have the option to see the images in real time.

"We're able to stream video faster and get more information processed at a faster rate," says Randle of their move to the Toshiba\* laptop with Intel® Centrino® Duo mobile technology. "We can download data over the WiFi network faster than our cabled connection in the RV. We can get the information down, look at it and transmit commands all in real time. It's truly amazing."

When transmitting video images from the vehicle in flight, the pilots need a laptop with seamless processing capabilities to ensure the flight commands are relayed properly, and that the returning data is never corrupted. Intel® Centrino® Duo mobile technology is optimized to parallel thread and execute multiple applications at one time, which increases performance and responsiveness.

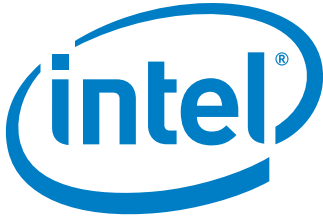
"We have 10 seconds to act and send new commands to a vehicle if it encounters a problem in flight. With the Toshiba, we aren't overworking the processor, even when sending 24 megabyte video files in full frame," says Randle, noting if they lose connection with the vehicle in flight, it will instantly land. "Stable connectivity, and relay of data and commands is critical. This laptop works smoothly. It's tremendous."

### **Scouting Mines Safely**

For mining companies to identify new mineral sites, they must slowly survey the land collecting geotechnical data. Piloted planes are often required to fly lower and slower than they are designed for. According to Randle, Mission Critical offers mining companies a safer solution, since eight to 10 pilots die every year during those flights.

"It's much safer with unmanned vehicles. If it crashes, no one is on board," he says. In fact, Mission Critical has never lost a vehicle while performing a geotechnical survey. What's more, the savings to the mining company can be up to 59% when compared to a manned plane survey.

Aside from increased safety and savings, Mission Critical allows its mining company clients the chance to observe the survey data in real time. If needed, the Mission Critical laptop pilot can fly the plane back over an area of interest instantly. "Since we get more detailed data during our flights than was previously possible using manned flights, the mining company is hoping to find new reserves under some of the dead wells," Randle says. For mining companies looking for new reserves, returning to a site that has no oil can cost an average of \$8,500 per day. With Mission Critical's same day mapping they can pinpoint new reserves in real time.



### Future Uses

According to Randle, unmanned vehicles are an emerging industry with endless possibilities for use including transporting cargo, agricultural spraying and even video footage of sporting events.

The reliability of WiFi connectivity and speed of data transmission with Intel® Centrino® Duo mobile technology is opening up new business opportunities for Randle, who is investigating using WiFi base stations with cameras mounted on hydro poles to constantly monitor and report back on a client asset like a power cable. The laptops' increased range is also allowing Mission Critical greater options for taking off, landing and in-flight monitoring because of the impressive range of the WiFi signal that can be captured on the new laptops.

With proven cost-effectiveness and increased safety on their side, Mission Critical forecasts tremendous growth and opportunity for the technology in their business.

Find out more about a business solution that is right for your company by contacting your Intel representative, or visit the Intel Business Enterprise Web site at [intel.ca/business](http://intel.ca/business) or its industry solutions specific sites at [intel.ca/business/bss/industry](http://intel.ca/business/bss/industry).



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