

Case Study

3One BPL System Deployment

Multi-building Spa and Resort



Type of Building	Hotel and Conference Center
Location	Vancouver Island, BC, Canada
Year Built	2003
Number of Buildings	46
Number of Floors	Varies
Number of Suites/Cabins	190
Installation Date	June 2005

Challenge

To supply reliable high-speed Internet access to every cabin and multiunit building on the 22 acre resort property.

This luxury Seaside Resort and Spa is located on Vancouver Island. The resort, which contains 190 guest suites of handcrafted log construction, is home to Western Canada's largest resort spa, and features a 13 room conference centre, Dining Room and Lounge. In addition, the resort contains an indoor swimming pool, whirlpool, steam room, weight room, games room, tennis and volleyball courts.

To supplement the wide range of services offered by the Resort, the decision was made to provide high-speed internet access to every room within the resort. Due to the layout of the Resort, high speed internet access was extremely hard to implement through traditional methods. Running Ethernet cable to every building was impractical as it would have to be run underground. Due to the disruption to the grounds and buildings, and the high associated costs,

cablings was ruled out. Wireless internet access was considered, however the large number of trees on the property and great distances prevented the signal from successfully traveling to all buildings. Therefore, BPL was considered the only feasible option for high-speed internet access at the resort.

Resort management contacted 3One and its Canadian BPL competitor in the spring of 2005. The Resort orchestrated a three-month trial period whereby both BPL companies would "BPL enable" 12 units at different times. 3One was subsequently chosen and secured the contract to deliver Internet throughout the entire resort for the following reasons: 3One technology provided a stronger high-speed Internet signal to all 12 units, whereas the competitive product achieved less than half the data transfer rates and was unable to service several units at all due to the substantial distances between buildings.

The test results - encompassing reliability, data throughput, and end-user experience - were quantified by independent consultants as well as Guest survey forms.

Design and Installation

In June of 2005, the Resort engaged 3One to supply and install a complete BPL system throughout the property. The requirements / constraints for the system and installation as specified by the Resort included:

- The equipment may only be installed in approved areas and must not be visible to resort guests
- Each BPL modem must supply at least a 2Mbps connection to power outlets in all guest rooms
- Each modem must be able to access the “zero configuration” network management gateway.

The network design for Resort was fairly complex due to the distances between the guest and conference rooms which were spread across the 22-acre property. The 192 guest rooms were divided into the following categories:

- 89 Ocean view Condos
- 12 Studio Units
- 41 Cottages
- 29 Spa Bungalow Studios
- 18 One bedroom Spa Bungalow Suites
- 4 Two-bedroom Spa Bungalow Suites

The final design effectively supported a combination of an “electrical” BPL installation, “phone line” BPL installation and point-to-point VDSL.

- In the large buildings (resort condominiums)
3One’s proprietary “phone line” BPL installation was implemented as these buildings contained a sufficient concentration of phone wiring. The BPL signal was therefore easily cross-induced from the phone lines to the power lines and ultimately electrical outlets for access via the BPL Modems.
- In the cabins (spa bungalows and cottages)
A standard electrical power line installation was used as the cabins contained limited phone infrastructure.

As shown in *Figure 1* below, VDSL was utilized to send the Internet signal from the ISP demark location (in a separate office building) to each telephone IDF (Intermediate

Distribution Frame). Within the IDFs themselves, the VDSL modem was connected to a BPL Bridge.

Testing of the Internet signal strength reaching the electrical outlets in guest rooms played a part in determining the final design. The equipment used varied between locations throughout the resort in order to maximize the end-user signal strength.

As the cabins are fairly large and spread out over significant distances, more Bridges were required to enable the resort than the overall “room count” would indicate. One Bridge was used to support just 8 - 9 cabins. Finally, there were three irregular cabins whose BPL signal was supplied from a multi-unit building, instead of a power panel, by use of a BPL repeater. The signal was received from the telephone BPL signal and then outputted to the power lines to feed the three cabins.

The decision of which electrical wires would be coupled was based on the equipment used in the different areas of the resort:

- If the buildings were running on a power line BPL installation the neutral line was generally coupled. Although in some cases, the 3 hot phase wires were used to drive the BPL signal to a specific sector of a larger multiunit building.
- If a phone line BPL installation was implemented, two couplers were used per Bridge. Each coupler surrounded 12 phone lines; the other phone cables in the bundle were enabled through cross-induction.



The final design required the following BPL equipment, in addition to the VDSL equipment and VLAN Switches, to enable high-speed internet access across the entire resort.

- 20 BPL Bridges
- 1 Repeater
- 25 Couplers
- 1 "Zero Configuration" Access Control Gateway

enable high-speed internet access to all buildings and cabins on the property. Two cabins, which were most distant to the signal injection points, showed signs after the installation of having weak or intermittent signals. 3One technicians subsequently revisited the resort and successfully resolved this problem. Since the installation, the Resort has provided reliable internet service to their guests with limited need for technical support and maintenance.

Conclusion

Upon completion, the final system supported a combination of electrical installations, phone installations, and VDSL to

