

# GOVERNMENT OF BRITISH VIRGIN ISLANDS

## TURN-KEY CONSTRUCTION OF ENTIRE WIRELESS NETWORK FROM DESIGN TO INSTALLATION

### INTRODUCTION

The wireless network of the British Virgin Islands (BVI) has grown and evolved over the last four years to the present state, covering most of the government agencies on all of the major islands. The present network includes 38 microwave backbone sites and 140 last-mile sites, all owned and operated by the Department of Information Systems Unit (ISU).

### DECISION TO GO WIRELESS

Early 2000, the BVI Government started to explore the idea of deploying its own wireless networks. The cost of leased lines from multinational telephone operators were so expensive and yet deliver so little in bandwidth. Its own cabling was not an option due to prohibitively high costs, remote terrain, and having to cross the ocean over multi-island connections.

The ISU Department first chose to go with Solectek's SkyWay multipoint systems for the simple and compelling reason: The SkyWay had been widely deployed in the Caribbean and Solectek's systems engineering team was available to provide turn-key services to deploy wireless systems as well as to integrate microwave backbones and other networking solutions.

### PHASE 1: ROADTOWN

First project was to "wire up" the capital city of Roadtown. Using the 2.4 GHz SkyWay multipoint system, Solectek systems engineering team designed and installed the network comprising of 51 last-mile sites and 4 backbone sites in two months from start to finish. Much care was used to ensure that there is no RF interference in this very high density deployment scenarios in a small city.

The network provided connectivity to virtually all of the public service agencies in Roadtown, including fire, police, and administrative offices. Having established its own broadband connections, the Government did not need to provision extremely costly services from international telephone companies.

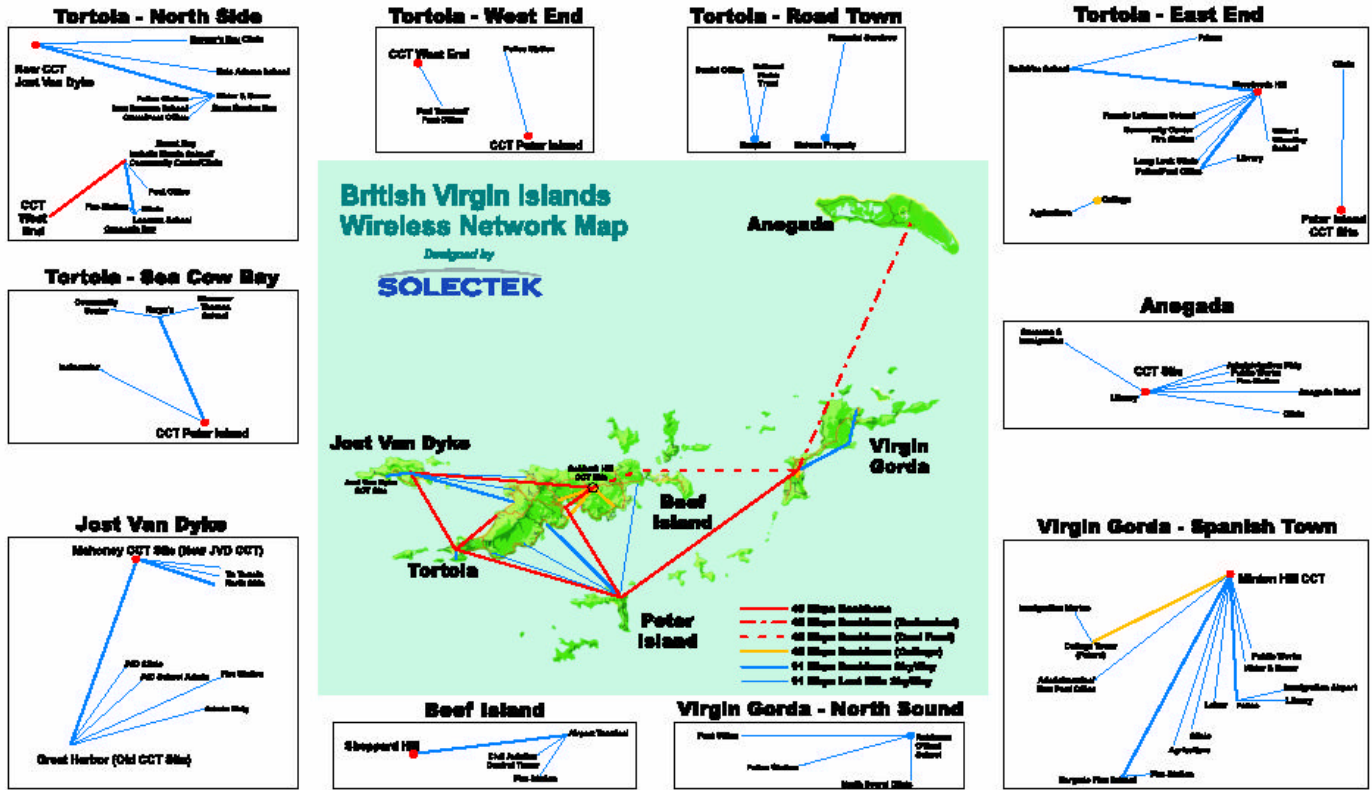


*The British Virgin Islands (BVI), located in the Caribbean, is world-famous as a tourist destination. With sandy beaches and a deep-water port, cruise ships can be found in Roadtown, its capital, year round.*

*Due to its remoteness, the communication infrastructure was difficult to establish and services remained costly. The Government in 2000, decided to roll out wireless networks throughout the island nation.*



*One of the last-mile radios is being installed at the Governor's mansion in the capital city of Roadtown.*



The network diagram drawn up for Phase II and III of the wireless connectivity project.

## PHASE 2: INTER-ISLAND CONNECTIONS

The success of Phase 1 encouraged the BVI Government to greatly expand the wireless network. In fact, the ISU Department, headed by Ms. Annabelle Malone, put together a master plan to connect all government agencies across the islands. Wireless backbone links are to connect all major islands from the main island of Tortola and then use last-mile networks like the Roadtown network locally on those islands. The Phase II, shown in the network diagram above, was implemented in 2003 by Solectek systems engineering team. The extensive nature of the project made it necessary for Solectek to provide a turn-key service, ranging from procurement of all last-mile/backbone components to physical installation of all radios and antennas. The backbone links consisted of licensed microwave radios operating in the 6 GHz band. The last-mile was the same Solectek 2.4 GHz SkyWay-NET products used in the Roadtown network. Phase II added broadband connectivity to the islands of BVI's college and medical centers.

Working on these island poses significant logistics challenges for the Solectek installation team such as transporting the large bucket trucks. However, to meet the Government schedule, the entire project was finished in two month before the Thanksgiving holidays of 2002.

The priority of Phase II was to extend the government network to two islands: Virgin Gorda, BVI's second largest island after Tortola and Peter Island where a famous resort town is located.

### **PHASE III: FURTHER EXPANSION**

The Phase 3 project was a natural expansion of Phase II and brought on more islands like Beef Island and Jost Van Dyke to the network. Completed in the fall of 2003, the Phase III project included 5.8GHz backbone links to some islands instead of licensed.

### **PHASE IV: COMPLETION OF THE MASTER PLAN**

The Phase 4 project to be completed in 2005 enabled the Government to turn on the broadband on all major islands, including Anegada, the most outlying island at 13 miles from Virgin Gorda. Some islands will have multiple backbone links to different locations. All of the islands will have more last-mile extensions. For the last-mile work, the new 5GHz SkyWay 5000 Series multipoint systems were introduced. In order to avoid interference with 5.8GHz backbone, the 5.5Ghz frequency bands were utilized to avoid interferences from the 5.8 GHz backbone links installed. The SkyWay 5000 Series is an upgrade from 11Mbps of the earlier 2.4 GHz systems to 72 Mbps, giving more bandwidths to agencies with heavier network traffic. Overall, additional 66 last mile radios and 20 backbone radios were installed.

### **PHASE V: FUTURE PLANS**

The Government intends to use the 5 GHz systems for other last mile connectivity as well as upgrades to some links that demand higher bandwidths.

### **SUMMARY**

The Government of BVI now has a wireless network that spans from the capital city of Roadtown to all major islands. All of essential government service branches are connected on a single high-speed network. Due to the high cost provided by the telephone company and remote island locations, broadband wireless was the only sensible choice. The government now enjoys a state-of-the-art broadband connectivity without recurring charges and low maintenance.



*Solectek systems engineers are installing the radio and antenna on a rooftop and a wall. Mounting locations were determined in close consultation with the Government staff.*