



Introduction to Business Cloud

White Paper

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Introduction

The world is moving towards digitalization, and this has tremendously increased the usage of communication devices. Everyone wants to be connected to the world and be in touch with it constantly through multiple networks and devices. The multiple networks allow them to exchange information either through wired or wireless media. But, to manage the devices and the networks, a huge investment is needed. The investment includes hiring IT professionals with high level of expertise, and installing the latest hardware set-up. The biggest challenge is to manage the networks and devices efficiently and effectively. The latest technology which is Cloud Computing has proven very expedient in this regard.

Seeing the advantages and current usage of cloud technology, the imminent scope of this technology can be visualized. Hence, D-Link is equipped to provide a new solution “Business Cloud.” This white paper provides a simple, secure, scalable, and intelligent solution for the multiple challenges faced by the customers. It explores the key features of Business Cloud and its benefits for various sectors of the market.

Background

It has been observed that various sectors in the market are looking for uninterrupted high performance Wi-Fi solution for their employees, customers, and guests. As discussed above, these days’ people want to be connected to the network 24X7, even when they are moving away from their organization’s network infrastructure. Mobility is needed when they are travelling to different places, like multi-site offices, cafes, university area, hotels, and public places. This introduces a necessity for such places to have high performance and continuous networking facility which can be easily utilized by their customers.

People working at multiple sites want to be in touch with each other and also want to access data of their organization without being connected to their office server directly. Easy access to company documents, files, and applications without any location or time constraint is their foremost requirement. This is one of the challenges faced by the companies as setting up server at each location is not a cost-effective solution.

While walking into a café or a hotel, the customer expects to have a Wi-Fi connection and wants to be connected to the rest of the world without any disturbances. The cafes or hotels have to improve their network infrastructure to such an extent that they can satisfy their customer needs. Multiple Wi-Fi routers and Access Points (APs) are installed in the premises to provide uniform services. To manage several devices in a widely spread region, highly skilled workforce, and latest hardware set-up is needed. This is another challenge faced by the Hospitality sector. Similarly, education sector also faces the same problem.

The solution to all the above said problems is the pioneering and proven technology “Cloud Computing.” D-Link has come up with a solution “Business Cloud.” The Cloud has eradicated the problem of installing servers to store data and hiring professionals for the maintenance of these servers. Cloud provides numerous servers along with highly skilled staff, and it allows its clients to utilize the Cloud space to store their data. People working at different locations and in different time zones can share and upload data through cloud without being connected to their office servers. It provides easy access to all the stored data, files, documents, and applications to all the intended users.

Cloud has the ability to virtually manage the widely spread APs and push configuration to all the APs at one go without adding any delay. It also provides continuous auto-updates to the client in case latest updates are available. This provides massive scalability, providing virtually unlimited resources to the client. The software or additional devices for network expansion can be easily deployed from any location through remote management.

Solution

To address the diverse requirements of various industry verticals, D-Link Access Points (APs) offer the flexibility of getting connected and managed by the virtual controller located in the cloud server using D-Link cloud solution. D-Link Business Cloud is a **Multi-Tenant solution**, a unique feature, where the tenants are classified into following three categories:

1. *Service Providers*

These are the entities that provide cloud services to the clients. Taking help of a user interface developed by D-Link, the service provides aid their clients to manage their access points. With the offered Business Platform to the service providers, D-Link manages operation servers hosted on AWS, provides complete support, and collects subscription fee from the ISPs (Internet Service Providers). ISPs leverage this solution to the store owners or to the system integrators.

2. *System Integrators*

System Integrators act as a bridge between the Cloud solution and the end users. They offer consulting services to provide a scalable and flexible solution to the end users. The business owners may contact them directly to avail the cloud services.

3. *Store Owners or Customer Segments*

This category consists of all the business units which have numerous APs installed in their premises and want them to be managed through cloud. These are the end users.

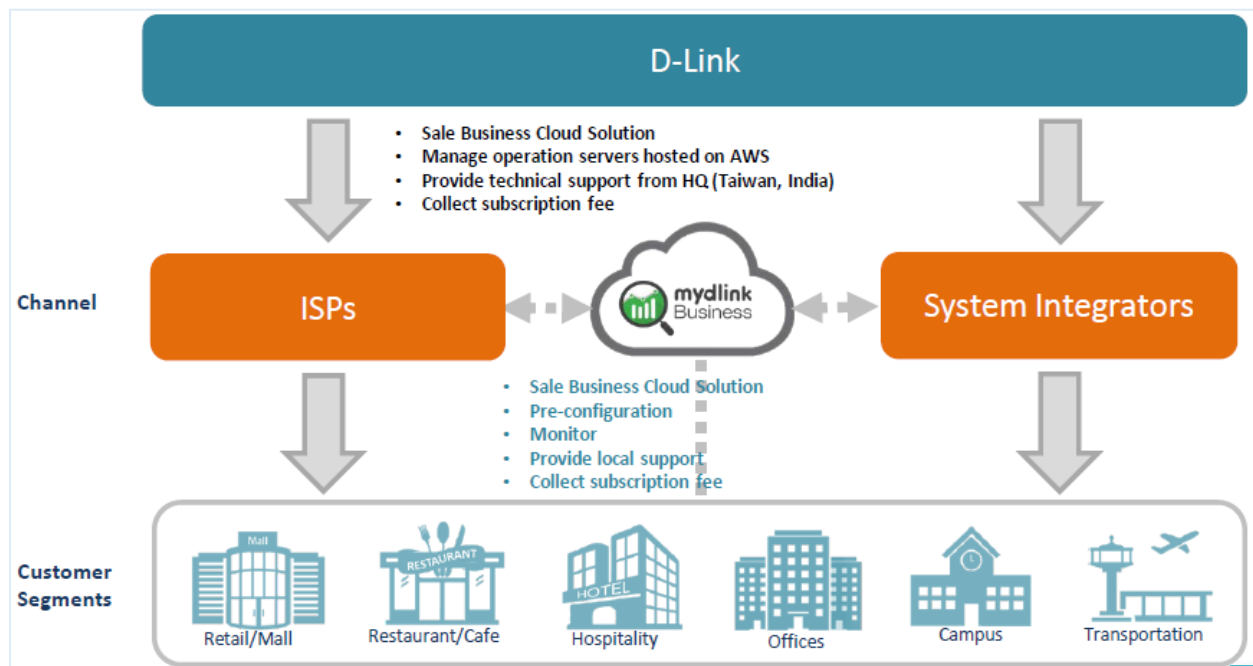


Figure 1 Cloud Architecture

The service provider comprises of multiple **Organizations**. The organization could be a retail store, restaurant chain, hotel chain, or offices. Each organization might have multiple offices at various sites; each location being specified with a single **Device Group**. To provide internet access to the clients and its workforce, multiple APs are installed at each site. Hence, multiple **Devices** are present under every Device Group. All the devices located at multiple locations can be easily deployed through the Business Cloud

Solution without any manual intervention, reducing the cost of installation and commissioning at each site. The pictorial presentation of the role-based structure is given below:

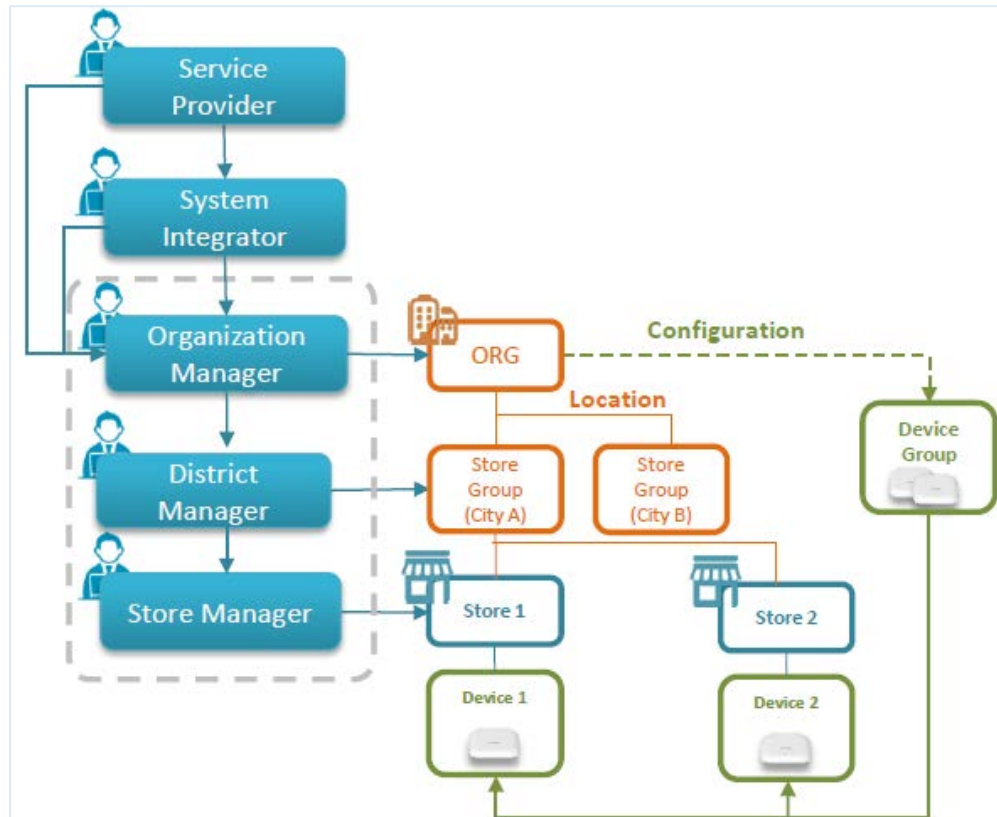


Figure 2 Role-based Structure

D-Link Business Cloud, not only serves the purpose of Device Management but can also be used for Business Intelligence where it uses the raw data to analyze the traffic and network usage. With traffic analysis, the organization gains information about its visitors, their frequency of visiting the place, and the time spent. On one hand, it helps the marketing team of an organization to decide its strategies based on the analysis done by the Business Cloud, like which site is flooding with traffic and what are the peak hours, while on the other hand, based on the clients' visits, it helps the organization to utilize the resources and network usage efficiently.

Where Service Providers help in *Device Management* by managing the devices deployed at multiple locations, Device Groups help in *Business Intelligence* by analyzing the raw data captured for the traffic that has utilized the internet services.

D-Link Business Cloud is a solution to help the various market sectors in managing their networking devices with its special key features. The features offered by Business Cloud are discussed next.

Out-of-the-band Architecture

The Business Cloud architecture is unique in its way as it has separate control and data planes. It allows only device management control packets between cloud controller and network devices. The data traffic (web browsing, streaming, etc.) flows directly to its destination via internet instead of going through the controller. This helps the network to stay up even if the connection to the cloud controller is lost. It supports geographically distributed datacenters to ensure highest possible availability of service.

Scalable

Scalability is one of the main features of Business Cloud. It allows the user to scale up or scale down the number of APs without any difficulties. In the traditional way, increasing the number of APs will increase the number of servers which adds expenses, otherwise the quality of the wireless connection deteriorates. Business Cloud has solved this problem by virtually supporting unlimited number of APs. The number of clients supported is dependent upon the selected AP model.

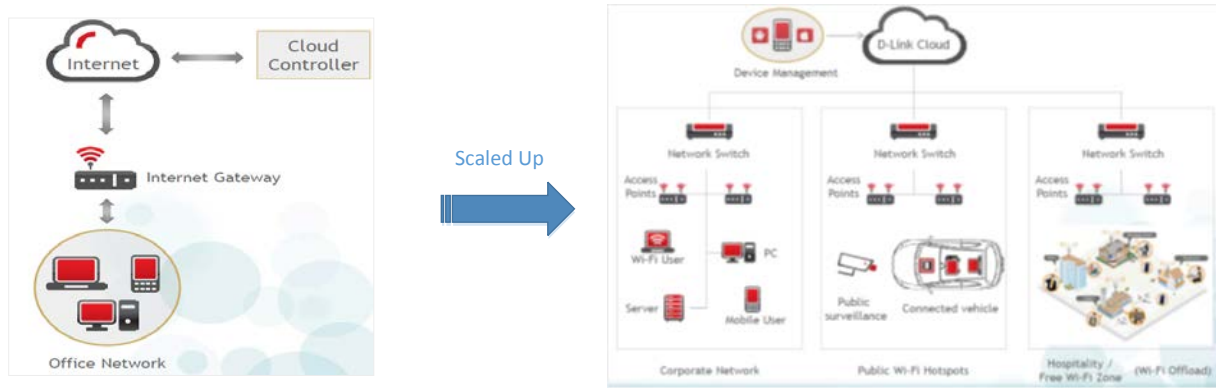


Figure 3 Displaying Scalability

Simple

Business Cloud comes with an intuitive Graphical User Interface which is very easy to operate. It provides an overview of the wireless networks and APs managed by the portal. It contains an AP overview, listing the total clients and APs per store, most active SSIDs, most active APs, and most active clients. The Google Map and customized floor map integration provides an interactive global map and is used to get a Geographical representation of each store.

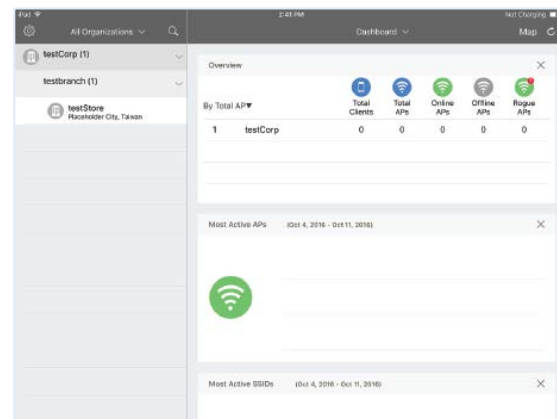


Figure 4 Dashboard of Business Cloud

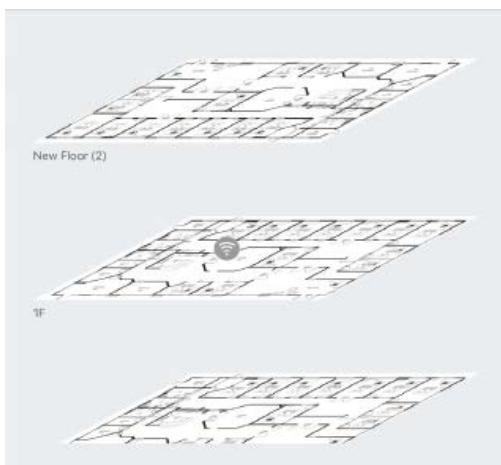


Figure 5 Maps and Floor-plan

Floor Plan

The floor map is used to place APs on a schematic diagram of the building. This allows APs to be located and any problems to be easily identified.

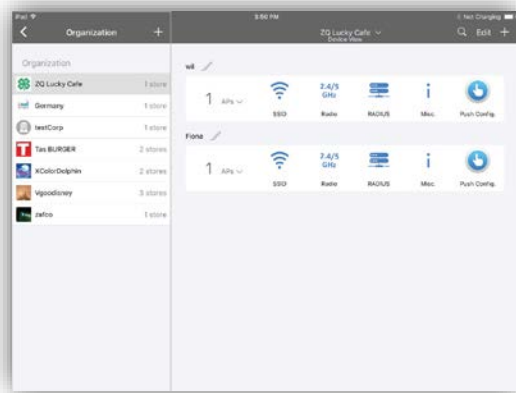


Figure 6 Zero Touch Configuration

Zero Touch Provisioning

The Zero Touch Configuration is supported which pushes the configuration settings to all the devices in the store group without any manual intervention. It also supports Social Login e.g. Facebook Wi-Fi, Google.

Secure

Security has always been a major concern for all the Wi-Fi communications. To make the communication fully secure, D-Link Business Cloud ensures that all the traffic from AP to cloud is encrypted. It allows the user to define a list of IP addresses and MAC addresses of the devices that will be allowed on your Wi-Fi network, filtering out all the other devices. Business Cloud has a feature of Rogue AP Detection that lists all the rogue APs found in its vicinity.

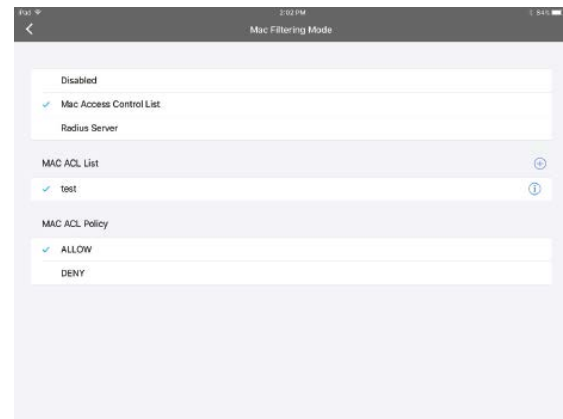


Figure 7 MAC Filtering

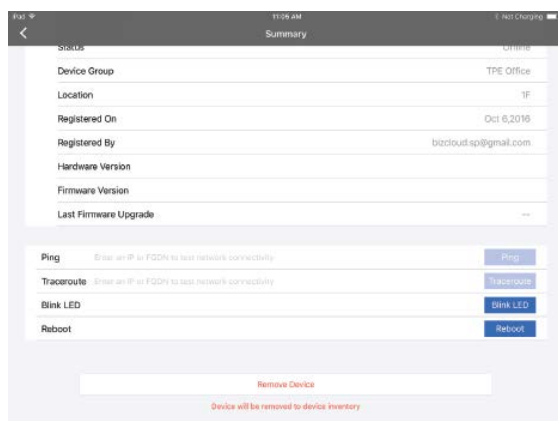


Figure 8 Business Cloud Diagnostic Tools

Intelligent

Business Cloud monitors network health, and on identifying any problem, it immediately acts to troubleshoot the issue. Several diagnostic tools, like integrated ping, traceroute, and Blink LED are provided to check the cloud connectivity. Business Cloud can remotely reboot the APs. It keeps logging all the events based on client joining, firmware upgrade, channel change, and these events are also sorted on the basis of their venue, SSID, AP, and client.

Intended Market Sectors

The market sectors that are benefitted by the Business Cloud solution are discussed next.



Figure 9 Various Market Sectors

Small and Medium Business (SMB) 🏠

This market sector could further be split into the following three types of offices: Micro, with up to 25 users; Small Office, with up to 100 users; and Medium Office, with up to 250 users. Business Cloud plays an important role in the micro and small offices where the company has very limited resources. For such offices, Business Cloud acts as a Cloud Controller to manage the network. The companies that have offices at multiple geographical locations use Business Cloud for the management of the complete network setup.

Benefits to SMB:

- Easy and Instant access to company data
- No direct connection to the office servers needed
- Cost effective solution
- Allows Multiple sites to work simultaneously
- Centralized management of all the connected devices
- Seamless service to its clients



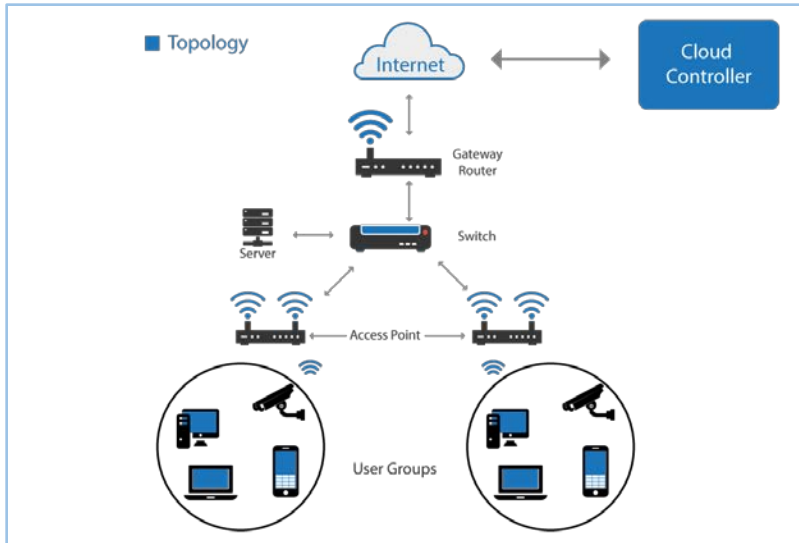


Figure 10 Topologies for SMB (100 users)

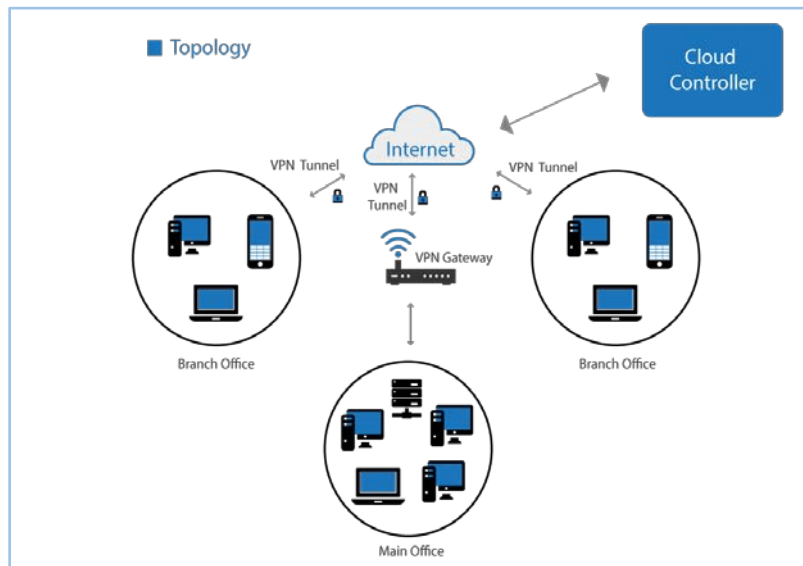


Figure 11 Topologies for Multi-site offices

Retail Sector

Chain Stores are the retail outlets that sell consumer goods and services with a brand name and are centrally managed. Such outlets have multiple stores nationwide or even worldwide, and each store has at least one AP to offer free Wi-Fi access to its customers and staff. Configuring or upgrading each AP manually and then to manage the connected devices require a team of highly skilled professionals. The chain stores can save their expenses by choosing Business Cloud as the solution to all the reported issues. Business Cloud provides a Zero-touch configuration feature which allows the user to remotely push the configuration to all the connected APs at one go. The centralized management of Business Cloud can easily manage all the APs deployed at different stores through Cloud UI.

Benefits to Retail Sector:

- Zero-Touch Configuration
- Saves Installation cost
- Centralized Management to geographically spread APs
- Easy deployment of all the APs



Hospitality Sector 

Hospitality sector is a vast term from the service industry that includes accommodation, lodgings, hotels, and various other similar services. There are many hotels which have their chain worldwide. The hotels with hundreds of rooms provide free Wi-Fi facility to all their guests. For seamless Wi-Fi facility, these hotels have installed numerous APs in their premises so that all the guests present there can access internet without any disturbances. Business Cloud’s Zero-Touch Configuration and centralized Cloud management features expedite the AP deployment to multiple locations worldwide without any manual intervention, reducing the total cost of the Wi-Fi Network.

Benefits to Hospitality Sector:

- Zero-Touch Configuration
- Saves Installation cost
- Centralized Management to geographically spread APs
- Easy deployment of all the APs
- Remotely FW upgrade of APs
- Simplified network management



Education Sector 

In today’s scenario, internet plays an important role in education as well. Various search engines are performing a role of encyclopedia for the students and teachers. So, internet has become a necessity for the whole education sector. Seeing the excessive demand and increase in the density of the communication devices, many universities have already increased the installation of APs in their campuses. In the education sector, Business Cloud lessens the burden of hiring a team to maintain the APs deployed in the campus. After connecting to the Business Cloud, the universities are need not to worry for the internet connectivity issues, even when the density of the devices further increases. Business Cloud, being a scalable solution can easily manage increase or decrease of the devices without any connection related quality issues.

Benefits to Education Sector:

- No need to hire IT Professionals
- Zero-Touch Configuration
- Reduces total cost of Wi-Fi networks
- Centralized Management to geographically spread APs
- Easy deployment
- Remotely FW upgrade of APs



Conclusion

Business Cloud is a simple, secure, scalable, and intelligent solution for network management. Being a Multi-Tenant solution provides Business Cloud an edge over other solutions present in the market. This feature supports multiple groups like Service Providers, System Integrators, and Store Owners and provides solution as per their requirements. It provides mobility to all the clients, making their lives simple by connecting them to the network seamlessly. Business Cloud has resolved the problem of spending huge amount on hiring dedicated IT professionals and purchasing expensive hardware for the network management. The centralized cloud management keeps a bird's eye view on the entire network. The features like zero-touch provisioning, scalable architecture, and auto-upgrade reduces the deployment time. Business Cloud ensures that the communication happening to and from the cloud is completely secure. That's why the data is sent in an encrypted form to the cloud. The features like IP/MAC filtering, Rogue AP detection, and firewall rules also help in securing the network and avoid any malicious activities by any unauthorized devices. It generates automatic reports of all the event logs, and diagnostic tools are helpful in diagnosing and troubleshooting the issues.

All the key features and benefits of Business Cloud prove that it is one of the most innovative and helpful solutions in the market.

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