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## ***The Challenge***

*Controlled Internet Access*

*Automated Registration process*

*Restricting access to authorized computers*

*Tracking student activity*

*Fair bandwidth usage*

*Detecting misuse and taking corrective action*

*Filtering unwanted content on the network*

*Reliable and Scalable solution*

*Detailed reporting and tracking*

*Blocking Torrent and Peer-to-peer software*

*Compliance*

## **Advanced Bandwidth Management and Policy Control at Indian Institute of Management**

IIM (Indian Institute of Management) are India's premier institutes of management and is recognized worldwide for its excellence in management education. Students got through one of the toughest entrance exams in the world before getting admitted to the school. Over last decade, the Government of India has decided to expand the number of IIM to cater to the growing need of management graduates in India and abroad. Wi-Fi was given an opportunity by one of the new IIMs to provide Wi-Fi Internet service to the whole campus including the student hostels.

### **The challenge:**

Computers and Internet play a very vital role in student's academic life today and management schools are no different. Students need Internet service round-the-clock for academic research, project coordination, communication and entertainment. The management school wanted to offer free Internet service to all its students, staff and visitors. However the network administrator was concerned about the bandwidth management, controlling access and tracking user's activity while on the school network.

The same network was extended to student dormitory/hostel so the students could use the network during the night hours. The management wanted to ensure that every student gets his/her fair share of bandwidth without compromising the quality of service for the other users on the network. The network administrator wanted to implement various policies on the network that allowed him to penalize the users for misuse and control the access to the network based on different class of users. He also wanted to implement daily quota and restrict the usage of Torrent and peer-to-peer network. He was also concerned about the registration process and didn't want to go through manual registration process every semester.

Finally the school management was interested in monthly reports on usage and activity on the network to ensure that the school complies with the Internet laws. They also wanted to implement a solution that is reliable and scalable to ensure that students get access 24 hours a day, 7 days a week.

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## ***The Solution***

*Captive Portal*

*Individual User Registration Process*

*Registration Mechanism          Approval*

*Individual Login for each student*

*Allocating daily Upload and Download quota*

*Automated Mac Binding*

*Group Based Bandwidth Allocation*

*Detecting Torrents and other Peer to Peer Software*

*Date and Time Based Policy management*

*Content Filtering*

*Student Online Activity Tracking*

*Detail Report and Alerts*

## **The Solution:**

To fulfill the above requirements, Wifi-soft deployed an Intelligent Network Controller - "UniBox" in the existing Wi-Fi network. The controller provided the following features to handle the requirements of the network listed above -

**Captive Portal & Registration Form:** The UniBox allowed the network administrator to create and maintain branded captive portal with college name, IIM logo, pictures and announcements. The portal page resided inside the Unibox thus allowing faster loading file for the login page. In addition, a registration form was designed and linked to the login page. The registration page was used for first-time users to register for a new account for accessing the network.

**Registration and Approval Process:** The administrator wanted to implement a registration and approval process for each new student on the network whereby the student had to register for a user ID and password. Unique user ID also ensured that each student activity was tracked and student access was tightly controlled. Finally the administrator wanted to implement an approval process so the registration process could be automated and required minimal manual intervention.

**Daily Upload and Download Quota:** Bandwidth allocation and its usage were one of the prime concerns of the network administrator. He wanted to implement quota restrictions for each student to ensure each student gets fair allocation of the network bandwidth. UniBox allowed the network administrator to categorize students into different groups and allocate quota on a daily usage.

**Automated Mac Binding:** The network administration wanted to allow only legitimate users to access the Internet. He also wanted to ensure that students don't share their user ID with their friends outside campus and only valid computers are allowed on the network. UniBox allowed the administrator to implement automatic MAC binding along with client restrictions. It automatically tagged the user ID with the computer's MAC address during the time of registration. It also ensured that existing students were not prompted to enter user ID and password if they were accessing the Internet from the registered computer.

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## **Unibox Highlights**

*Individual Logins for each student*

*Fair Bandwidth Allocation*

*Automated account registration*

*Approval Mechanism*

*Automatic MAC Binding*

*Student activity tracking*

*Group Based Policy*

*Date and Time Based Policies*

*Content Filtering*

*Daily Upload and Download Quota*

*Torrent and P2P Traffic Control*

*Student's Online Activity Tracking*

*Alerts and Reports*

**Group based Bandwidth Allocation:** The network users were divided into different batch of students, staff and faculty with each having different bandwidth allotment. The network administrator wanted to allocate bandwidth to each group in accordance with the rules laid out by the management. UniBox allowed the administrator to categorize the students into different groups and allocate different network settings to them.

**Detecting Torrents and P-2P software:** College environments are notorious for the usage of Torrents and peer-to-peer software like limewire, gnutella, eDonkey and others. These applications are responsible for hogging most of the network bandwidth and adversely affect the performance of the network. The administrator wanted to ensure that the students are prevented from using the software on the school network. UniBox provides advanced traffic engineering module that detects the students using sharing software and prevents from the utilizing the network resources.

**Date and Time Usage Policy:** The network administrator wanted to automatically control access to the students based on their academic schedule. This was necessary to prevent users from using Internet during academic sessions. UniBox allowed the administrator to create policies for group of users and control their access when classes were in session.

**Content Filtering:** The college management wanted to restrict students from accessing adult and blocked content on the network to ensure that the network is used only for academic purpose. UniBox allowed the administrator to implement content filtering service that automatically blocked the unwanted content from the students. UniBox automatically synced up with the central server to get periodic database updates.

**Online Activity Tracking:** The management wanted to keep an anonymous log of the activity for each user on the network to comply with the Internet laws. The online activity tracking system in UniBox allowed the administrator to keep a log of all activity on the network and generate monthly report for the management.

**Alerts and Reports:** Finally, the network administrator wanted an automated reporting system so the management can track the system performance, usage patterns and activity on the network. UniBox provided comprehensive reporting features like the ones mentioned below –

- Online users and their activity reports
- Usage reports
- Billing reports

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## **Wifi-soft Highlights**

*We are the experts in Hotspot Management solutions and have more than seven years of experience in wireless Industry*

*We manage more than 2,500 hotspots worldwide and our systems are currently running in more than 20 countries.*

*We serve over 3 million users each month on our managed networks.*

*We serve Industries like*

*Hospitality, Education, Retail, Construction, Aviation etc.*



- System Performance reports

The network monitoring module also monitors each network element and alerts the administrator in case of an outage.

**Conclusion:** With the help of UniBox the network administrator was able to control the access to network, implement fair bandwidth allocation, limit unwarranted usage and automate the student registration process. It also helped improve the network performance and provided more control on the network.

Today more than 130 students, 40 staff members and 30 faculty members are utilizing the network on a daily basis. Even after implementing the bandwidth quotas, the daily usage exceeds over 20 GB. The UniBox is operational for over a year without any major interruptions serving the users 24 hours a day, 7 days a week.

For more details please visit our website or write to us.

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