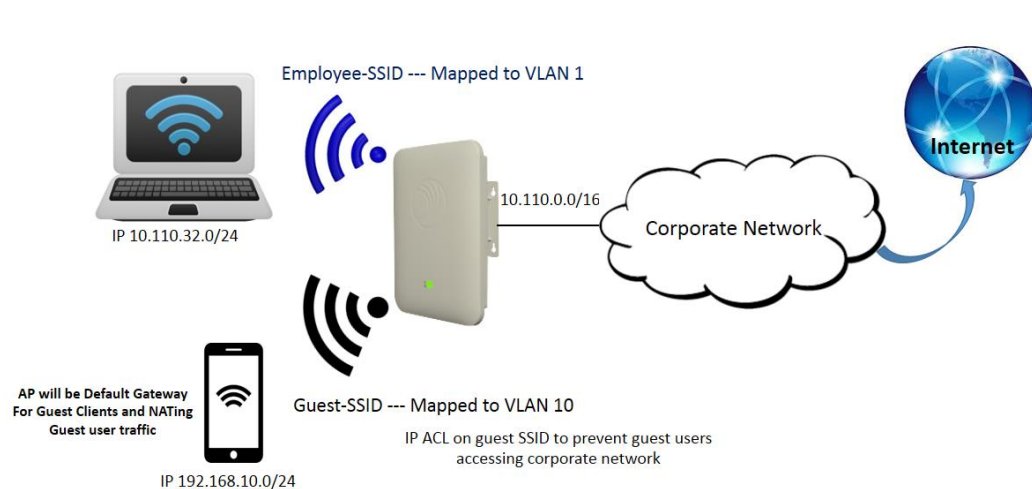


Guest-Access-Solution-On-cnPilot-AP-Isolating-Guest-Traffic-Only-To-Internet

Use Case Description: Here is the use case requirement,

1. Provide Wi-Fi access to employee with full access to the company network resources
2. Provide guest access service to company guest users
3. Guest users shall be authenticated with user name and password before providing internet access
4. Guest users traffic needs to be isolated from employee traffic
5. Guest users shall be able to access the internet only and restrict guest users accessing company network resources

Reference Network Topology



Corporate network: 10.110.0.0/16

Guest Access Network: 192.168.10.0/24

Solution Recommendations:

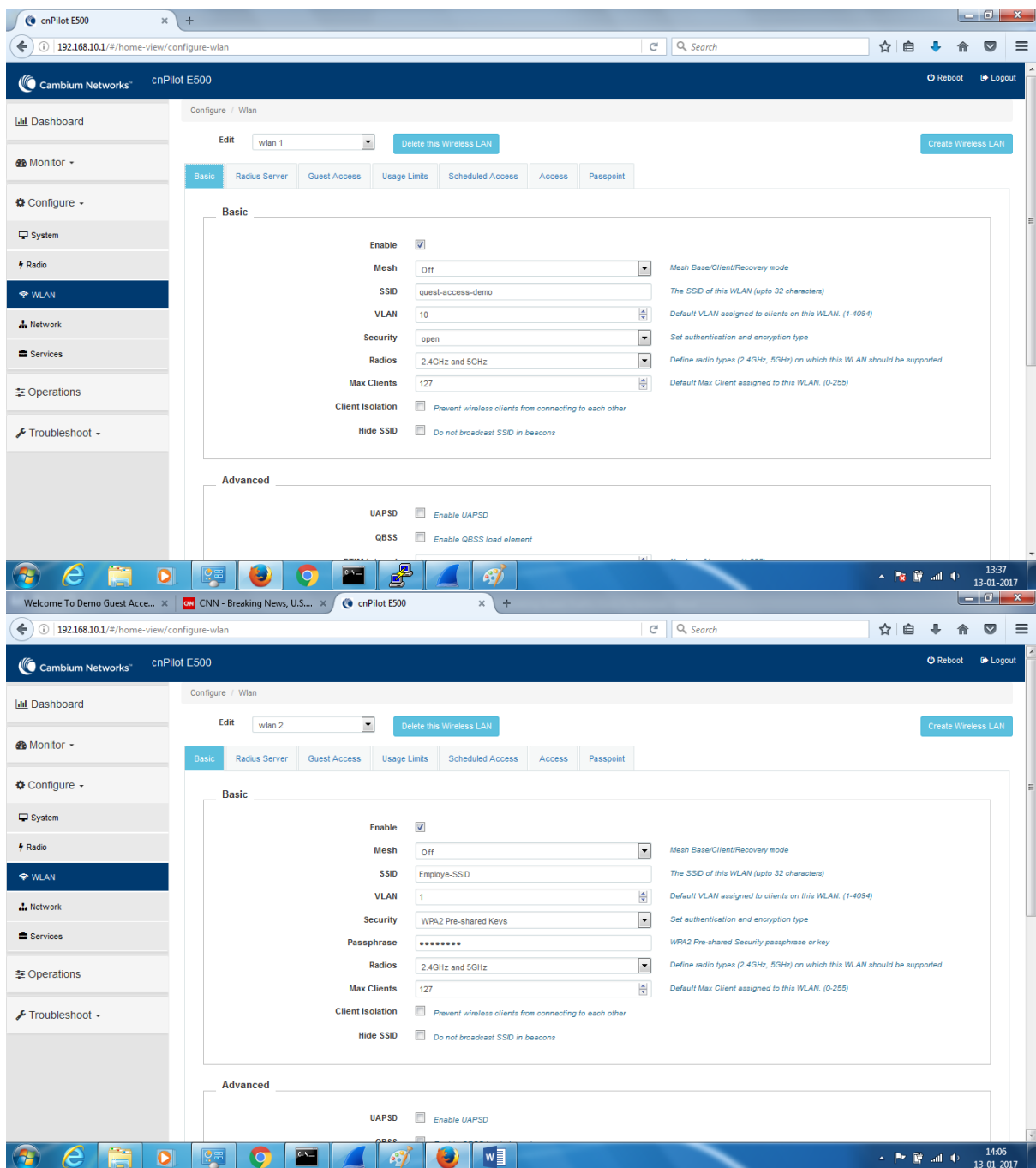
1. SSID 1 will be reserved for company employee and will be mapped to VLAN 1
2. SSID 1 will be mapped to VLAN 1
3. AP ETH1 port will be mapped to VLAN 1
4. DHCP client is enabled on AP VLAN 1
5. External DHCP Server and Default Gateway for employee SSID
6. SSID 2 will be reserved for guest users and mapped to VLAN 10
7. Guest user will be authenticated with the local data base user
8. Guest Access service will be running on the AP
9. SSID 2 will be configured with IP ACL to deny traffic from guest users going to corporate network but allow guest users traffic to internet
10. AP Will be configured with VLAN 10 SVI

11. NAT is enabled on VLAN 10
12. AP will be configured with the DHCP server for VLAN 10 to server IP addresses to guest users
13. AP will act as default gateway for guest users

Solution Limitation: Guest users roaming from one AP to another AP will not be seamless roaming i.e. guest user will be forced to authenticate when he roams to 2nd AP

Recommendation for the solution limitation: Keep external default gateway and external DHCP server for the guest users. External default gateway can route or NAT the guest user traffic to internet. AP Ethernet port needs to be configured as trunk port allowing VLAN mapped to employee SSID and VLAN mapped to guest SSID

APs configuration screen shots are attached for reference purpose



cnPilot E500

192.168.10.1/#/home-view/configure-wlan

Cambium Networks™ cnPilot E500

Reboot Logout

Dashboard

Monitor -

Configure -

System

Radio

WLAN

Network

Services

Operations

Troubleshoot -

Configure / Wlan

Edit wlan 1 Delete this Wireless LAN Create Wireless LAN

Basic Radius Server Guest Access Usage Limits Scheduled Access Access Passpoint

Enable ☒

Portal Mode ☒ Internal Access Point ☐ External Hotspot ☐ cnMaestro

Access Policy ☐ Click through Splash-page where users accept terms & conditions to get on the network

☐ Radius Splash-page with username & password, authenticated with a RADIUS server

☐ LDAP Redirect users to a login page for authentication by a LDAP server

☒ Local Guest Account Redirect users to a login page for authentication by local guest user account

User Name guest Internal radius guest user name

User Password ***** Internal radius guest user password

Redirect Mode ☒ HTTP Use HTTP URLs for redirection

☐ HTTPS Use HTTPS URLs for redirection

Title Welcome To Demo Guest Access On cnPilot E500 AP

Title text in splash page (up to 255 chars)

Contents Guest Internet Access Traffic Will be Monitored For Security Purpose

Main contents of the splash page (up to 255 chars)

Terms Guest Internet Access Subjected To Cambium IT Terms and Access Conditions

Terms & conditions displayed in the splash page (up to 255 chars)

Logo Eg: http://domain.com/logo.png

cnPilot E500

192.168.10.1/#/home-view/configure-network

Cambium Networks™ cnPilot E500

Reboot Logout

Dashboard

Monitor -

Configure -

System

Radio

WLAN

Network

Services

Operations

Troubleshoot -

Configure / Network

VLAN Routes Ethernet Ports Firewall DHCP Tunnel PPPoE

VLAN

Edit VLAN 1 Delete this interface Add new L3 Interface

IP Address ☒ DHCP

☐ Static IP

Network Mask

NAT ☐ When NAT is enabled, IP addresses under this SVI are hidden

Zeroconf IP ☒ Support 169.254.x.x local IP address

Management Access Allow from both Wired & Wireless

CLM/GUI/SNMP access via this interface

DHCP Relay Agent

Enables relay agent and assign dhcp server to it

DHCP Option82 Circuit ID None

DHCP Option82 Remote ID None

Routing & DNS

Default Route

IP Address of default gateway

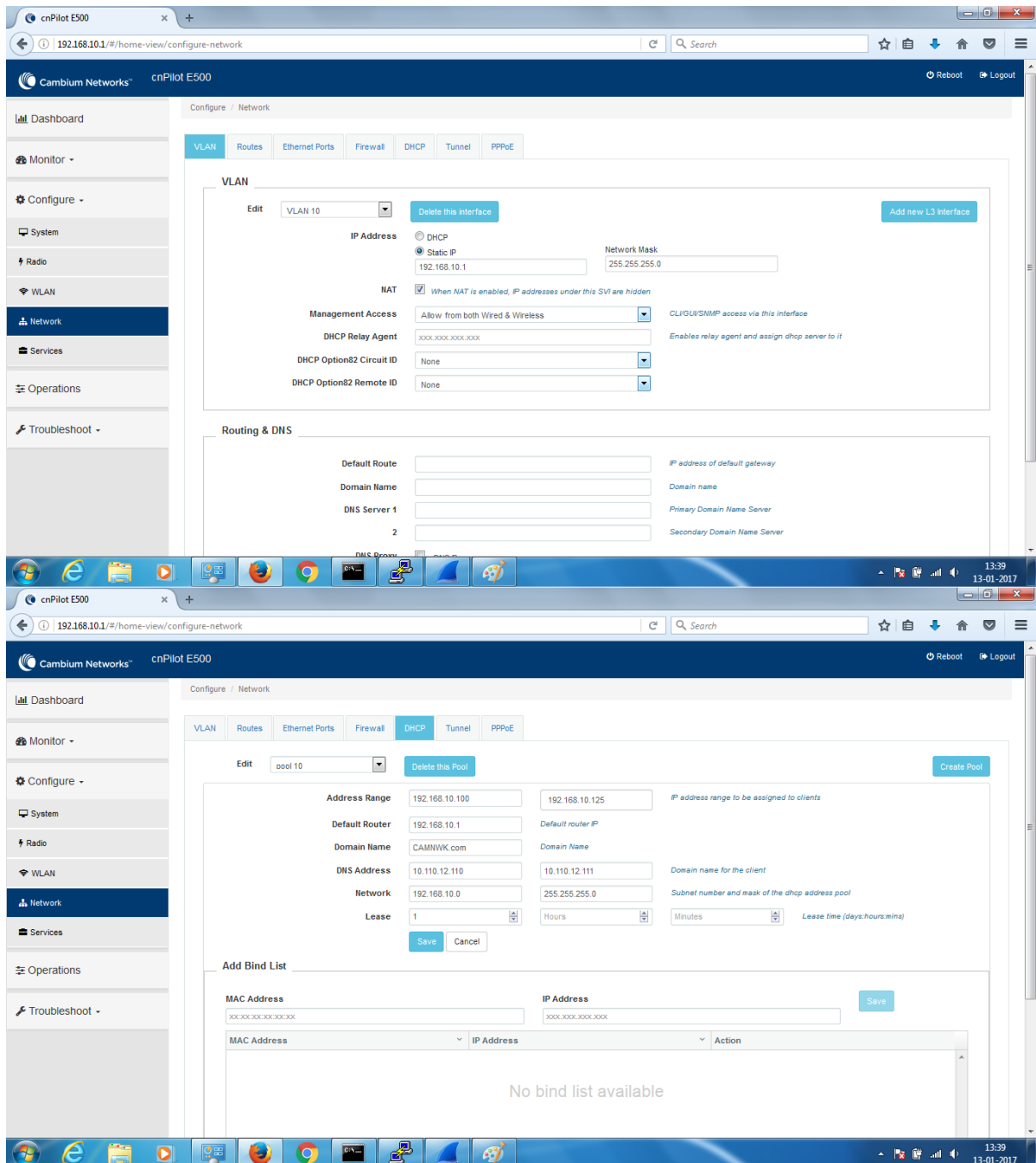
Domain Name

Domain name

DNS Server 1

Primary Domain Name Server

Secondary Domain Name Server



cnPilot E500

192.168.10.1/#/home-view/statistics-vlan

Cambium Networks™ cnPilot E500

Reboot Logout

Dashboard

Monitor -

System

Radio

WLAN

Network

Configure -

Operations

Troubleshoot -

Statistics / Network

VLAN Routes Ethernet Ports Tunnel PPPoE

Interface Details

Interface Name	IP	Source	TX Bytes	RX Bytes	TX Drops	RX Drops
VLAN10	192.168.10.1	N/A	8537011	1577054	0	21
ETH1	0.0.0.0	N/A	9458174	1474693	0	0
ETH1	0.0.0.0	N/A	1106651	9169623	0	121
VLAN1	10.110.32.73	N/A	1357857	8885254	0	0

1 - 4 of 4 items

Items per page

Computer Advanced IP Scanner chrome-is...

Recycle Bin Oracle VM VirtualBox screen-1

Acrobat Reader DC Zapd screen-2

Google Chrome Zap Quickstart screen-3

Mozilla Firefox onboarding... screen-4

Notepad++ FileZilla Server... screen-5

ikons-tel... TeamViewer 12 screen-6

putty shortcut Bitvise SSH Client

13:40 13-01-2017

Currently connected to:

CAMNWK.COM 2 (Unauthenticated)
Internet access

Wireless Network Connection

guest-access-demo **Connected**

Cambium

Test-001

r190_ssid

AAA-prabhat

CAMBIUM_2.4GHz_042798

kol-roaming

r200_1

Open Network and Sharing Center

13:42 13-01-2017

Welcome To Demo Guest Access... CNN - Breaking News, U.S... cnPilot E500

192.168.10.1/#/home-view

Cambium Networks™ cnPilot E500 Reboot Logout

Dashboard Home / Dashboard Refresh 30sec

Monitor -

Configure -

Operations

Troubleshoot -

Clients 1

Channel 11 2.4GHz 149 5GHz

Ethernet 1000M ETH1

RF Quality 2.4GHz 5GHz

Access Point Info

MAC Address	00-04-56-B1-4C-3A
Model	cnPilot E500
Software Version	3.1.1.1-r1
Device-Agent Version	2.62
Hostname	E500-B14C3A
Uptime	0 days, 1 hours 28 minutes
Available Memory	60 %
CPU Utilization	21 %
Hardware Type	Dual Band Outdoor Integrated
Regulatory	ROW
Serial Number	W6SC0498RMC
cnMaestro Connection Status	Connected to cloud.cambiumnetworks.com
cnMaestro Account ID	E4000_IREDDY_B17240

Radio Info

Type	2.4GHz	5GHz
WLANs	1	1
Clients	0	1
Channel	11	149
Channel Width	20MHz	80MHz
Power	29	23
MAC Address	00-04-56-B1-52-80	00-04-56-B1-5C-00
Transmitted packets	0 pkts/sec	16 pkts/sec
Received Packets	0 pkts/sec	16 pkts/sec
Average TX	0 bps	16.0 Kbps
Average RX	0 bps	12.7 Kbps
Mesh	OFF	OFF
Radio State	ON	ON

Client Count

Throughput

Mozilla Firefox Start Page

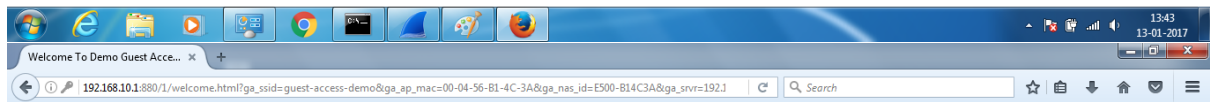
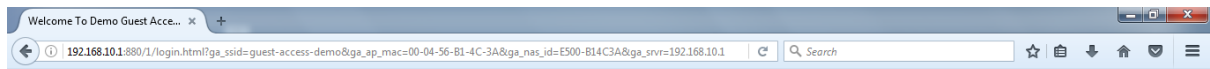
http://cnn.com/ Visit

Search

Downloads Bookmarks History Add-ons Sync Options Restore Previous Session

13:45 13-01-2017

13:42 13-01-2017



AP Configuration File

E500-B14C3A(config)# show config

!

no management telnet

management cambium-remote validate-server-cert

management user admin password \$crypt\$1\$2ZhV4KoqAnWIAxoydwyrhm88WHFO1oG

management cambium-remote

management https

management http

management ssh

led

no poe-out

country-code IN

!

wireless radio 1

no shutdown

channel auto

channel-width 20

channel-list all-channels

data-rate unicast 1b 2b 5.5b 11b 12 18 24 36 48 54

data-rate non-unicast highest-basic

power 30

no airtime-fairness

auto-channel-select on-startup

antenna-gain 5

beacon-interval 100

!

wireless radio 2

no shutdown

channel auto

channel-width 80

channel-list prefer-non-dfs

data-rate unicast 6b 9 12b 18 24b 36 48 54

data-rate non-unicast lowest-basic

```
power 30
no airtime-fairness
auto-channel-select on-startup
antenna-gain 5
beacon-interval 100
!
wireless wlan 1
ssid guest-access-demo
no shutdown
vlan 10
security open
band both
dtim-interval 1
max-associated-client 127
mac-authentication policy deny
guest-access
guest-access access-type local-guest-account "guest" "guest"
guest-access splash-page title "Welcome To Demo Guest Access On cnPilot E500 AP"
guest-access splash-page text "Guest Internet Access Traffic Will be Monitored For Security Purpose"
guest-access splash-page terms-message "Guest Internet Access Subjected To Cambium IT Terms and Access Conditions"
acl permit proto 1 udp 192.168.10.0/255.255.255.0 any any 53 in
acl permit proto 2 udp any 53 192.168.10.0/255.255.255.0 any out
acl deny ip 3 any 10.110.0.0/255.255.0.0 in
acl permit ip 5 any any any
!
wireless wlan 2
ssid Employe-SSID
no shutdown
vlan 1
security wpa2-psk
protected-mgmt-frames state optional
protected-mgmt-frames sa-query-retry-time 100
protected-mgmt-frames association-comeback 1
passphrase $crypt$1$LTi15th5G1LIPwpRZJw0j+C/4ODymINT
```

```
band both
dtim-interval 1
max-associated-client 127
mac-authentication policy deny
no guest-access
!
interface eth 1
switchport mode access
switchport access vlan 1
!
interface eth 2
switchport mode access
switchport access vlan 10
!
interface vlan 1
ip address zeroconf
management-access all
ip address dhcp
!
interface vlan 10
ip nat inside
management-access all
ip address 192.168.10.1 255.255.255.0
!
ip dhcp pool 10
address-range 192.168.10.100 192.168.10.125
default-router 192.168.10.1
dns-server 10.110.12.110 10.110.12.111
domain-name CAMNWK.com
lease 1 0 0
network 192.168.10.0 255.255.255.0
!
hostname E500-B14C3A
!
```

E500-B14C3A(config)#