Eno omrežje, ena varnost, ena IT izkušnja

26. September 2023, Marko Kašić, Vodilni ICT inženir

A1 ICT Distribucija

- Ekipa ustanovljena **2004**
- **Širok portfelj** varnostnih rešitev
  - Endpoint Security
  - Network Security
  - EDR in NDR
  - Privileged Access Management
  - Email Security
  - Secure Data Backup
  - Log management in SIEM
  - Omrežne rešitve (stikala, wifi, …)
  - Dodatna oprema za računalnike
  - …
- **Izkušena** ekipa

Izzivi kibernetske varnosti

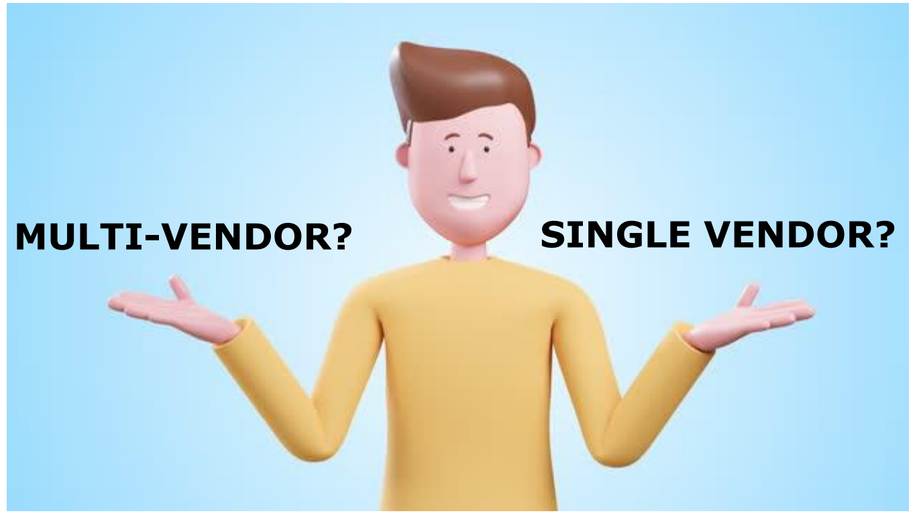
Cambium Networks™

Gartner Survey Shows 75% of Organizations Are Pursuing Security Vendor Consolidation in 2022

- ***Sixty-five percent of organizations consolidate to improve risk posture.***
- ***Only 29% of organizations consolidate to reduce spending on licensing.***
- ***SASE and XDR are opportunities for consolidation: 41.5% of organizations plan to have adopted SASE by the end of 2022.***

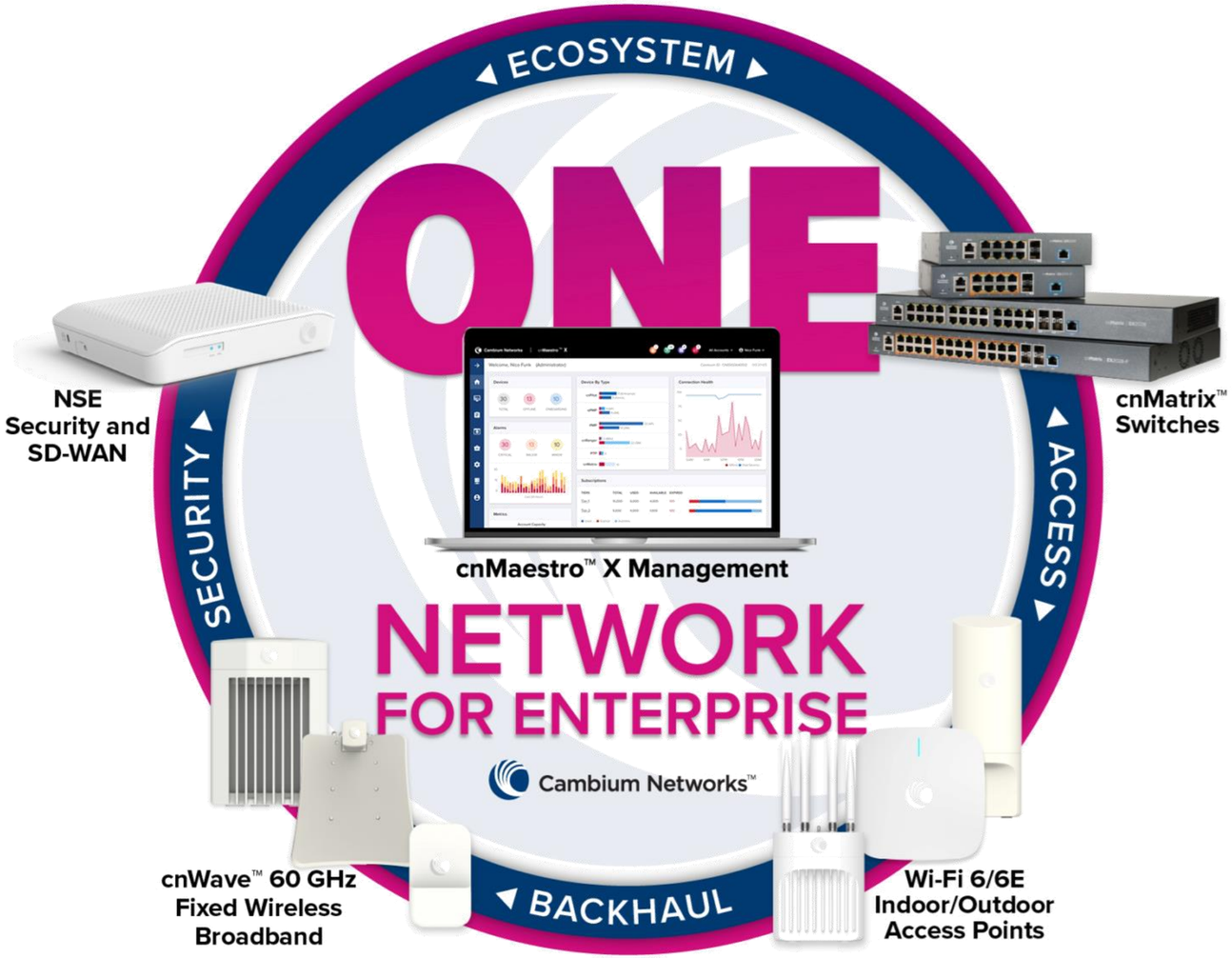
Konsolidacija omrežja

- Hitrejša zasnova in načrtovanje omrežja
- Hitrejša implementacija zaradi boljše kompatibilnosti oz. integracije orodij med seboj
- Homogeno omrežje je enostavneje vzdrževati (hitrejša odprava napak)
- Management homogenega omrežja omogoča pogled skozi en portal



Eno omrežje

Eno omrežje, ena varnost, ena IT izkušnja



Osredotočite se na posel, ne na omrežje

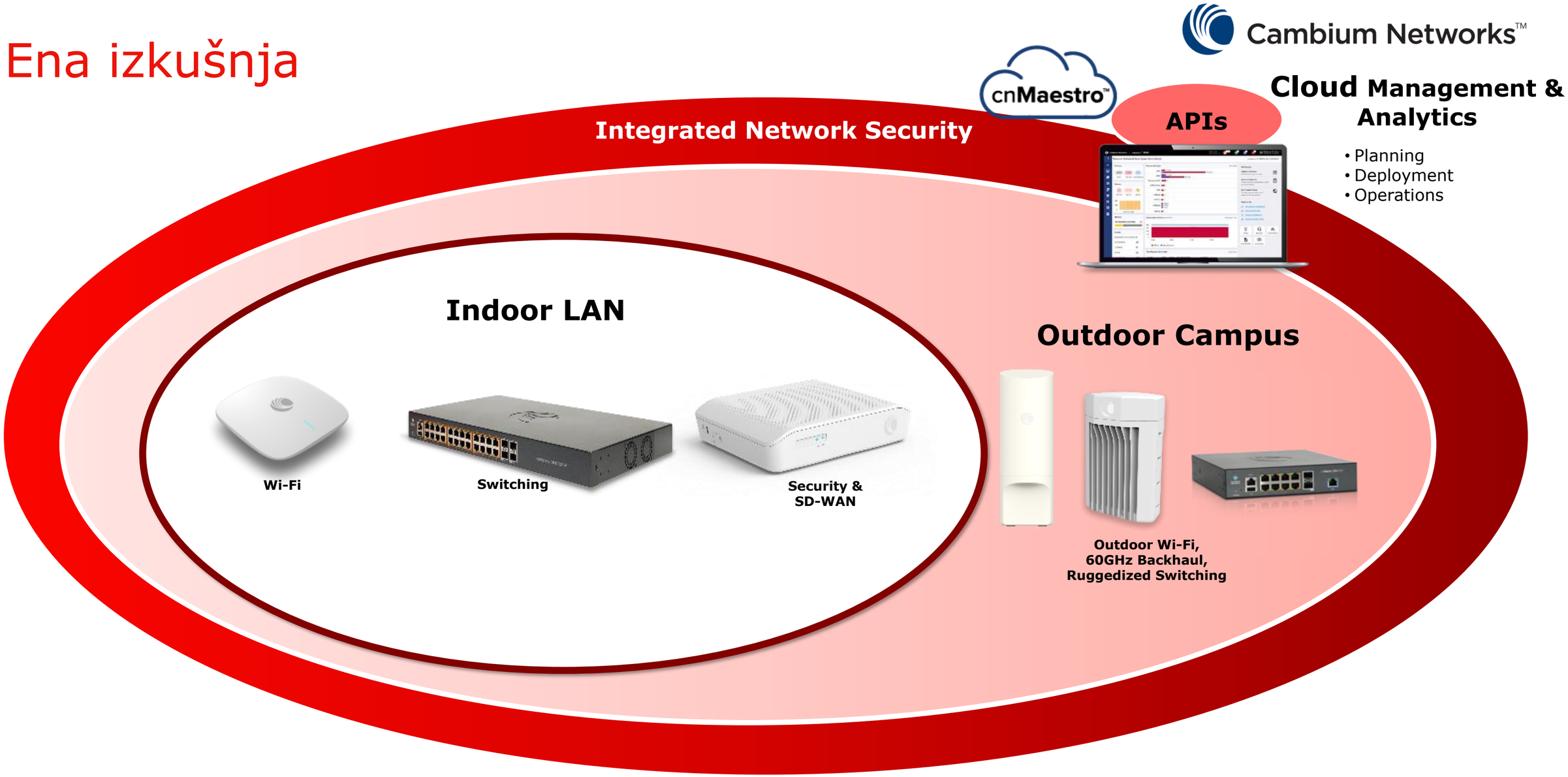
ENA izkušnja

Operativna odličnost

Predvidljivi rezultati

A1 ICT Distribucija

Ena izkušnja



Eno omrežje

Wi-Fi

Switching

Security & SD-WAN

Network Service Edge

Fixed Wireless

Brezžične dostopne točke
cnPilot WiFi5 in XV / XE WiFi 6 / 6E

Cambium Networks WiFi

- cnPilot Indoor

	E425	E410
Radios	Dual band 2x2	Dual band 2x2
Wi-Fi	11ac.wave2	11ac.wave2
5GHz EIRP	25dBm	30.5dBm
Ethernet	3 x GE PoE out	1 x GE
BLE	No	No
Environment	Wall plate	Indoor
Key Value	Flexible mounting USB port	Cost effective 2x2

- cnPilot Outdoor

	E510	E700
Radios	2x2:2	4x4:4
Wi-Fi	11ac wave2	11ac wave2
Capacity	1.3 Gbps	2.13 Gbps
Antenna	Integrated 8 dBi omni	Integrated 8 dBi omni
Clients	256	512
Transmit power	28 dBm	28 dBm
Ethernet	1 x GE	1 x GE 1 x GE PoE-Out
Temperature range	-40⁰ to +65⁰C	-40⁰ to +65⁰C

A1 ICT Distribucija

Cambium Networks WiFi 6 / 6E

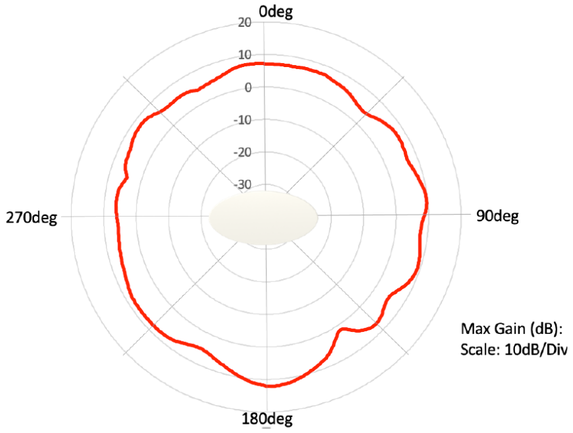
	XV2-21X	XE3-4
Radios	Dual Band 2x2	Tri-Band, Tri-Radio 4x4/2x2
Wi-Fi	Wi-Fi 6	Wi-Fi 6/6E
5GHz EIRP	33 dBm	30dBm
Uplinks	1 x GbE	1 x GbE, 1 x 2.5GbE
BLE	✓	✓

	XV2-23T
Radios	2
Bands	5GHz: 2x2 2.4GHz: 2x2
Wi-Fi	802.11ax
5GHz EIRP	27 dBm
Ethernet	Gigabit PoE-In
Antenna	10 dBi

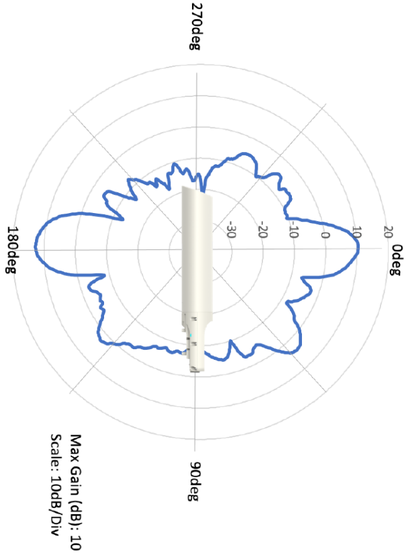
Cambium Networks zunanji AP

XV2-2T WiFi6

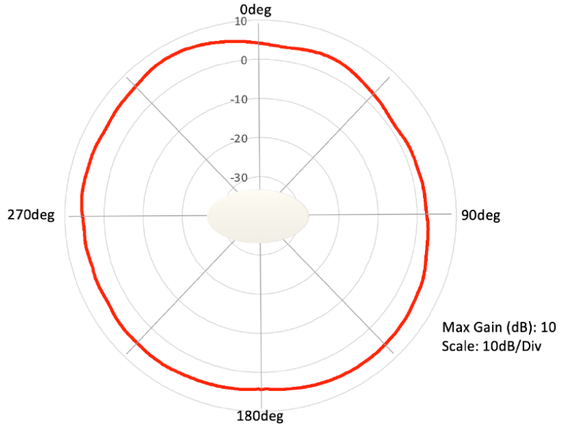
5 GHz Azimuth



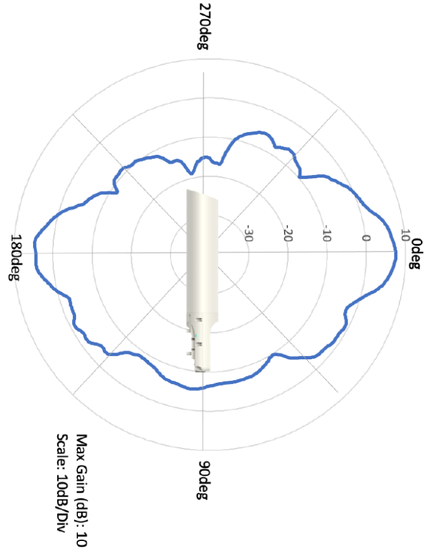
5 GHz Elevation



2.4 GHz Azimuth

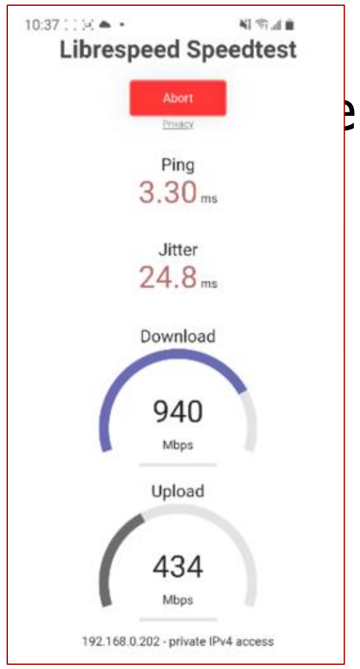


2.4 GHz Elevation

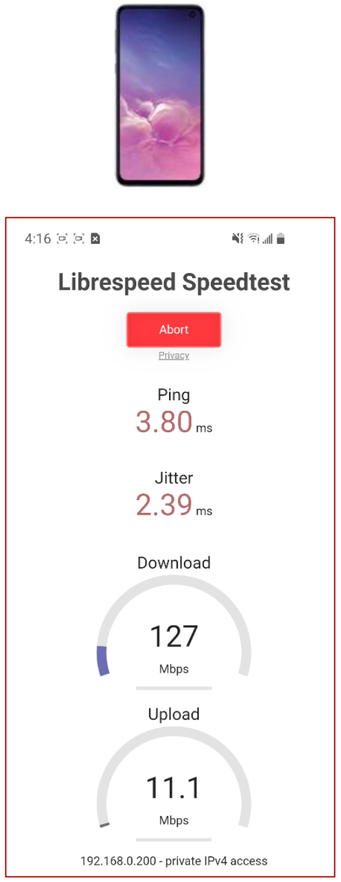


Test dosega s pametnim telefonom

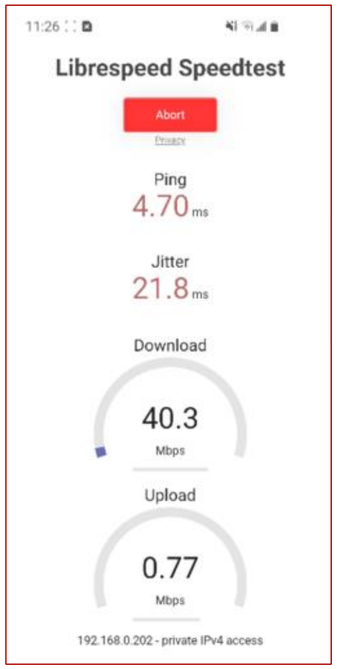
XV2-2T



0m – 940Mbps



450m – 127Mbps



1km – 40Mbps

Na konkurenčne AP-je se ni bilo več možno povezati pri tej razdalji

Povečane potrebe pri uporabi omrežja

Video

AR/VR

Cloud

Sledenje

Internet of Things

4K/8K Video

Software Defined radio

Dvakrat 4x4 5GHz ali enkrat 8x8

Klasična omrežja:

Dvojna kapaciteta omrežja, za visoko gostoto uporabnikov
Povišana MU-MIMO kapaciteta za najbolj razširjene kliente 11ac

Idealno za okolja z mešanimi napravami tipa 11n, 11ac ter 11ax

Migracija v omrežja 802.11ax:

Povečana kapaciteta omrežja, nižja latenca

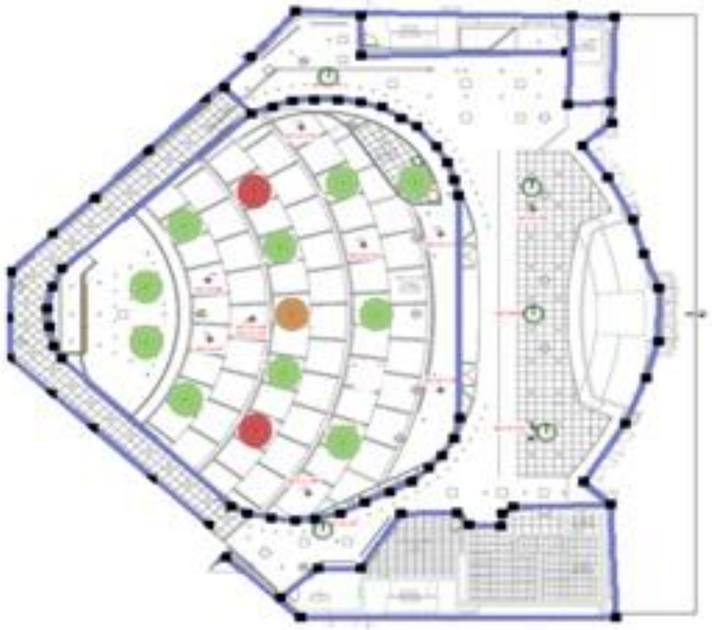
MU-OFDMA, MU-MIMO, IOT ready

Idealno kadar je omrežje vsaj 50% 11ax and 11ax IOT naprav

A1 ICT Distribucija

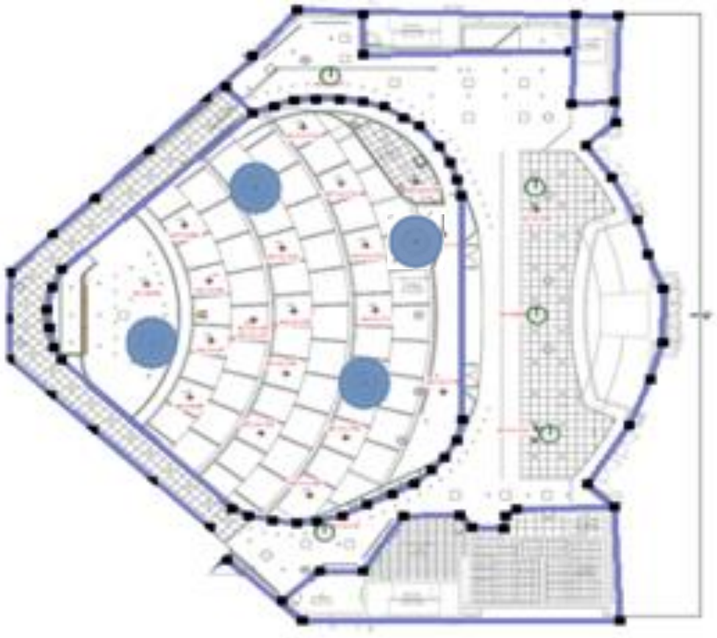
Primer uporabe

500 seat auditorium
400+ simultaneous devices
95%+ 5GHz



2-radio AP Design

12 APs
14 radios used
10 2.4GHz radios **turned off**



5-radio AP Design

4 High Density APs
20 radios used
1 2.4GHz radio turned off

Stikala L2 in L3 cnMatrix

Cambium Networks stikala L2 / L3

cnMaestro

- Profesionalna stikala s funkcionalnostmi na L2 in L3
- Avtomatizacija pravilnikov
  Profiliranje naprav in samodejna konfiguracija
- Upravljanje preko cnMaestro cloud ali on-premise
  Neprekinjeno delovanje tudi brez povezave do managementa
- Možnost samodejnega brisanja konfiguracije v primeru odtujitve naprav ali varnostnega incidenta
- Najboljši v razredu v TCO

Cambium Networks serija TX-2K

Ojačana stikala

- 8-port, 16-port, 24-port
- PoE & Passive PoE, High Power PoE (90w)
- Dvojno napajanje s hitro menjavo
- Cambium (GPS) Sync – redundančna vira
- Ojačana oprema s širokim temperaturnim obsegom delovanja:
  -10°C up to 65°C

Point-to-Point in Point-to-Multipoint ePMP in 60GHz

Cambium Networks ePMP

4X4 MU-MIMO sector antenna
70° beam width
4 x RP-SMA connectors
17 dBi gain
Dual polarization
IP65
-40 ºC to +60 ºC

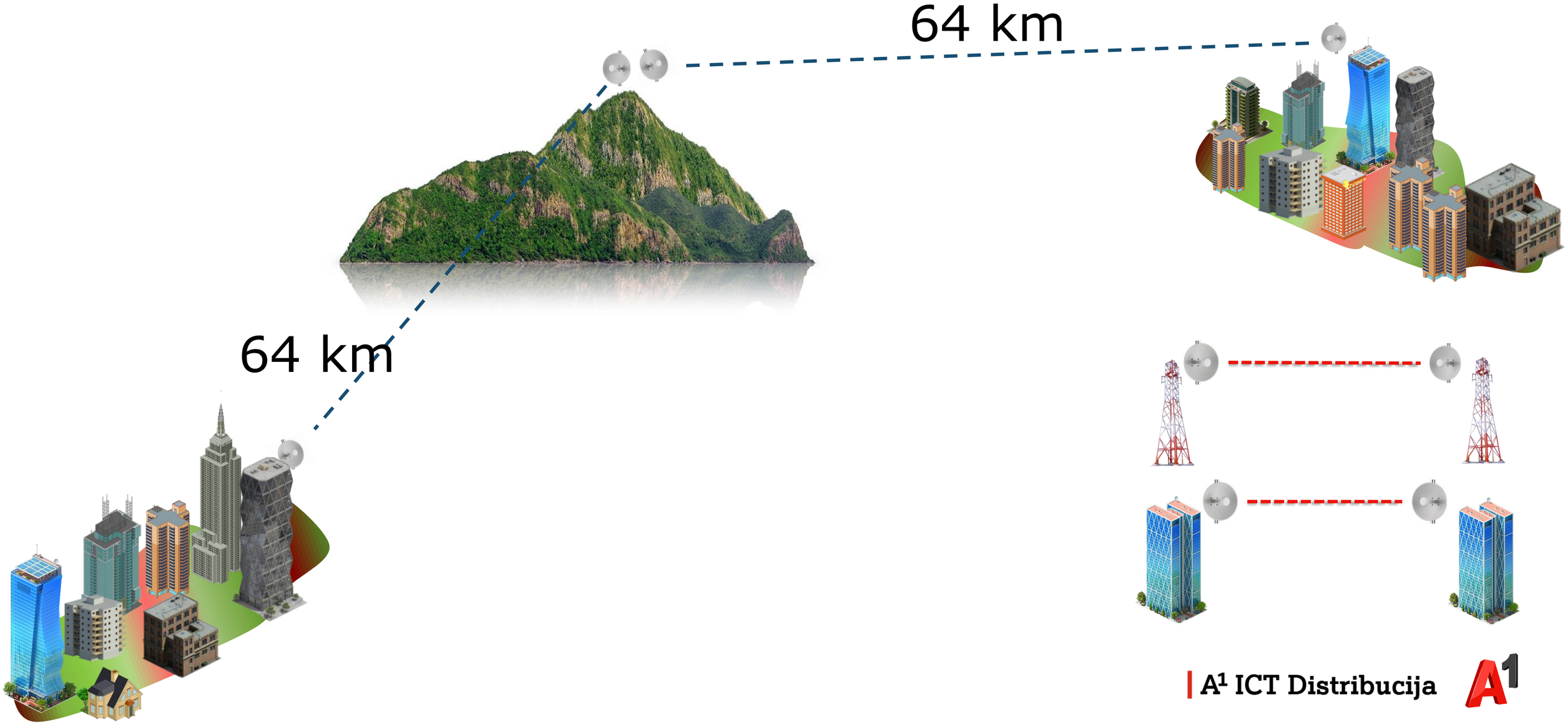
4X4 dual horn MU-MIMO antenna
60° beam width
4 x RP-SMA connectors
12 dBi gain
IP55
-40 ºC to +60 ºC

2x2 sector antenna MIMO
120° beam width
2 x RP-SMA connectors
18 dBi gain
IP65
-40 ºC to +60 ºC

2x2 MIMO beamforming antenna
uplink only
90° beam width
2 x RP-SMA connectors
17 dBi gain
IP65
-30 ºC to +55 ºC

Point to Point

do 64km

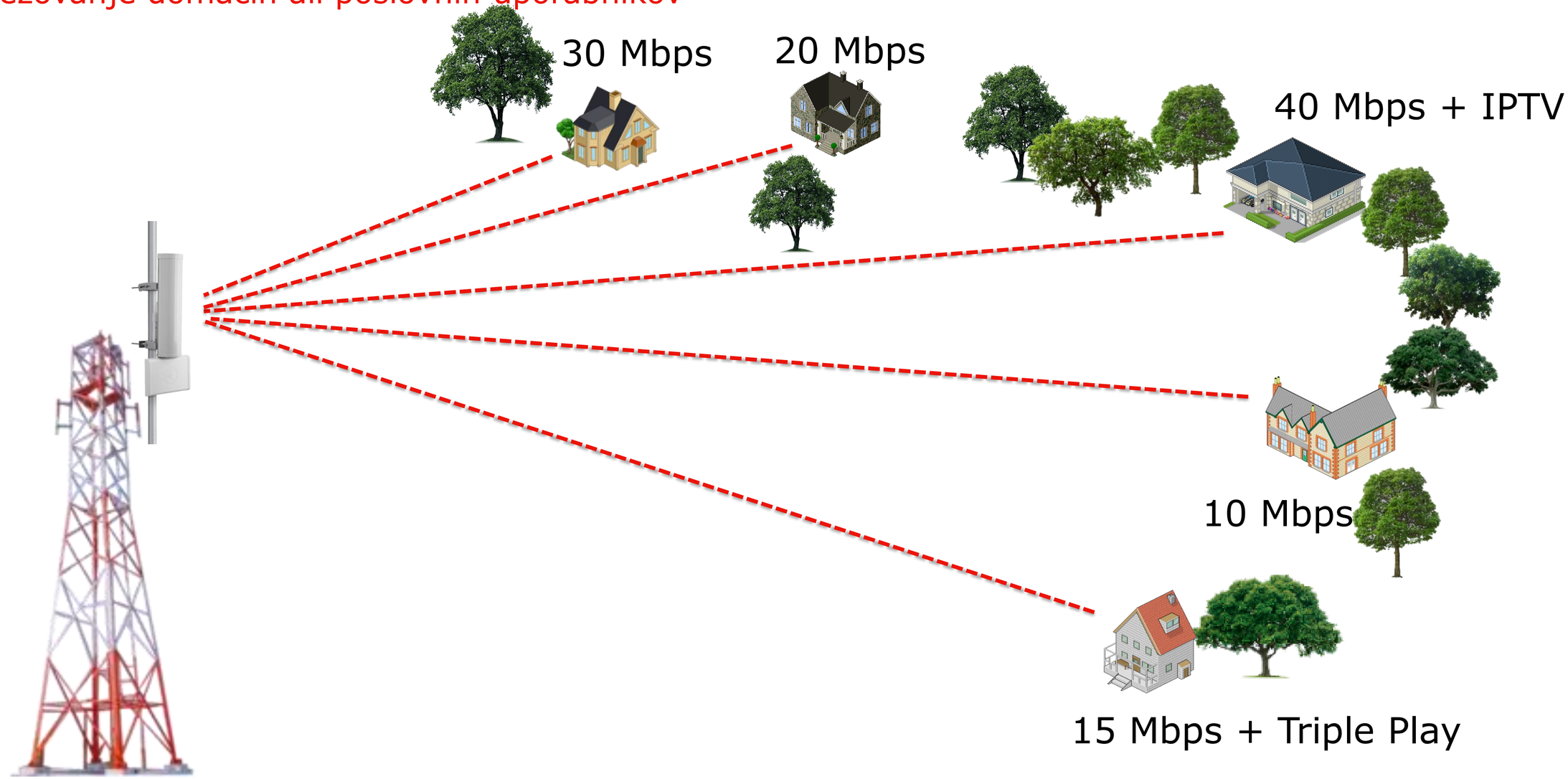


Cambium Networks™

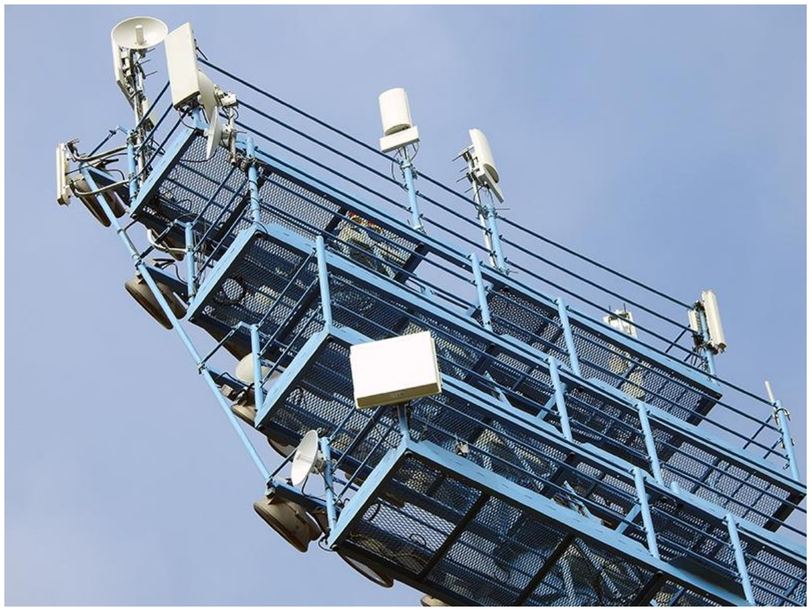
A1 ICT Distribucija

Point to Multipoint

Povezovanje domačih ali poslovnih uporabnikov



Cambium Networks ePMP



Cambium Networks cnWave 60GHz

Cambium Networks™

Distribution Node

Client Nodes (PMP or PTP)

V5000
Dual Sector

V3000
High Gain

44.5 dBi Dish

40.5 dBi Dish

V2000
Flexible
Mid-Range

V1000
Small
Form-Factor

Network Service Edge
NSE

Cambium Networks Network Service Edge (NSE)

WAN EDGE

- Routing
- WAN Load-Balancing and failover
- Bandwidth Control
- WAN QoS
- SD-WAN

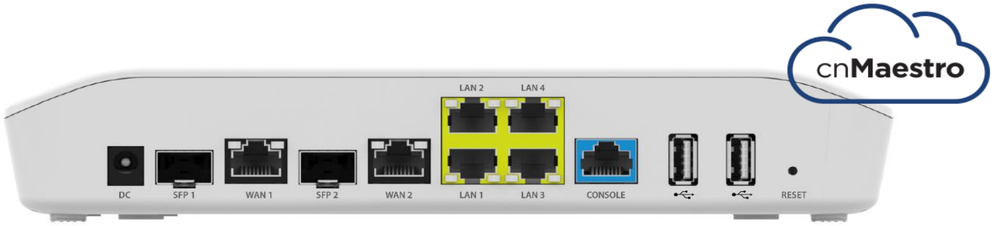
SECURITY

- Firewall
- **IoT Security**
- VPN with MFA
- **LAN security assessment**
- **Zero Trust Network Access (ZTNA)**
- IDS / IPS

NETWORK SERVICES

- DHCP
- RADIUS
- **Directory connectors**

Synthesize sensors across Wi-Fi, Wired ports and WAN
Qualify service across the enterprise network
Clear the blind spot in IoT security



NSE 3000 Edge Appliance

A1 ICT Distribucija

Cambium Networks NSE

Threats

Lima > Newman

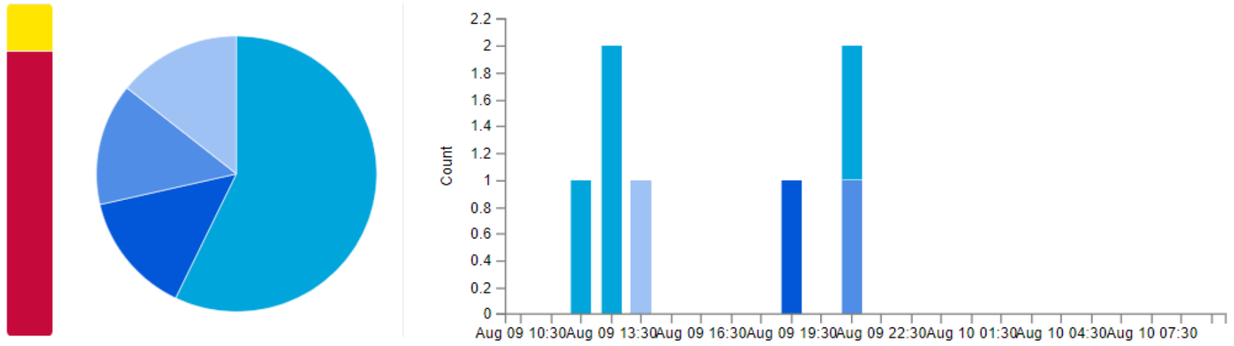
Dashboard | Notifications | Configuration | **Security** | Network | Performance | Software Update | Clients

Threats | Vulnerabilities

Time Range: Last 24 Hours Period: 5 Minutes

Total	Critical	Major	Minor	Countries
10	6	2	2	10

Threats by Category — Last 24 Hours



● Malware: 14.3% ● Miscellaneous: 14.3% ● Suspicious Traffic: 14.3% ● Unauthorized Access: 57.1%

Threats by Location — Last 24 Hours

#	Country	Threats
1	Hungary	1
2	Ireland	1
3	Sweden	1
4	Unknown	1
5	China	1
6	United Kingdom	1
7	United States	1

● Application Attack ● DoS Attack ● Information Leak ● Malware ● Miscellaneous ● Suspicious Traffic ● Unauthorized Access

Apply Filter(s)

Severity	Date and Time	Snort Class	Category	Country	S
Critical	Tue Aug 09 2022, 12:39:57 PM	unsuccessful-user	Unauthorized Access	Hungary	14
Critical	Tue Aug 09 2022, 12:19:56 PM	attempted-admin	Unauthorized Access	United Kingdom	2
Critical	Tue Aug 09 2022, 8:57:00 PM	successful-user	Unauthorized Access	Ireland	6
Critical	Tue Aug 09 2022, 1:25:33 PM	successful-admin	Unauthorized Access	Sweden	78
Critical	Tue Aug 09 2022, 6:43:26 PM	trojan-activity	Malware	United States	18
Critical	Tue Aug 09 2022, 9:17:01 PM	policy-violation	Miscellaneous	China	12
Major	Wed Aug 10 2022, 9:21:06 AM	rpc-portmap-decode	Application Attack	Germany	5
Major	Wed Aug 10 2022, 8:51:04 AM	web-application-activity	Application Attack	Iran	9
Minor	Wed Aug 10 2022, 9:06:05 AM	icmp-event	Suspicious Traffic	India	12
Minor	Tue Aug 09 2022, 1:40:34 PM	not-suspicious	Suspicious Traffic	Unknown	2

A1 ICT Distribucija

Cambium Networks NSE

Vulnerabilities

Dashboard | Notifications | Configuration | Security | Details | Performance | Software Update | Tools | Clients

Threats | Vulnerabilities | VPN

Vulnerabilitie Blocked	Critical	Major	Minor	Clients	Top Vulnerabilitie
300 Blocked Last 24 Hours	120	120	80	34	HTTP Port Open

Clients

Search

IP Address	Hostname	Device Type	Device OS	Last Scan	Total	Vulnerabilities	Severity
192.168.231.111	Harry	Phone	Android	4 days ago	91/53		
192.168.1.1	Job	Laptop	Window	55 days ago	35/75		
192.168.231.101	Richard	Laptop	Window	54 seconds ago	21/56		
192.168.100.206	Mei	Phone	Android	19 minutes ago	82/72		
192.168.100.209	Birney	Phone	Android	28 seconds ago	28/31		
192.168.231.103	Ian	Laptop	Window	18 days ago	49/41		

All Vulnerabilities

Search

Severity	Vulnerability	Devices Impacted	Percentage
Critical	Unpatched Windows OS	91/53	
Critical	HTTP Port Open	35/75	
Critical	Port 80 Open	21/56	
Label	Port 80 Open	82/72	
Critical	Port 2080 Open	28/31	
Major	Port 70 Open	49/41	5%

Unpatched Windows OS

The vulnerability is found in the Adobe Type Manager Library, and affects all supported versions of Windows 10, as well as Windows 7 and Windows Server. Microsoft said that it is "aware of this vulnerability and working on a fix".

The vulnerability is of particular concern given the numbers of people working from home due to the coronavirus crisis, who will have less access to tech support and need to make more decisions about their computer's cybersecurity than would usually be the case.

If exploited by a hacker, the vulnerability could be used to get users to open documents that contain malware, potentially allowing it to be used as a gateway for severe attacks.

Search

IP Address	MAC Address	Status	Device OS	Device Model	Updated	Vulnerabilities
192.168.100.207	AA:B2:CC:33:DD:21:DF	Offline	iOS	iPhone	1 hour ago	31
192.168.1.3	AA:B9:CC:54:DD:42:DF	Online	Windows	Lenovo	43 days ago	0
192.168.100.202	AA:BB:CC:33:DD:AD:DF	Online	Android	Samsung S1	4 days ago	27
192.168.231.109	AA:BB:C6:33:DD:21:DF	Offline	Linux	iPhone	38 days ago	20
192.168.231.105	AA:BB:5C:33:DD:21:DF	Online	Android	Samsung S1	41 seconds ago	0
192.168.100.205	BA:BB:9C:90:DD:21:DF	Online	Windows	iPhone	1 second ago	79
192.168.100.203	BA:BB:CC:33:DD:44:DC	Offline	iOS	Lenovo	36 hours ago	0

A1 ICT Distribucija

Cambium Networks NSE

IDS

Dashboard | **Notifications** | Configuration | Security | Network | Performance | Software Update | Clients

Alarms | Alarms History | **Events**

Apply Filter(s) | Export

Severity	Category	Source Type	Name	Message	Raised Time
Notify	SECURITY Status	Device NSE 3000	IPS_RULESET_UPDATE	Updated rule [snort-vrt]. Total [1... View Details	Tue Aug 16 2022 17:01:09 UTC
Notify	SECURITY Status	Device NSE 3000	IPS_RULESET_UPDATE	Updated rule [snort-vrt]. Total [1... View Details	Tue Aug 16 2022 05:00:53 UT
Notify	SECURITY Status	Device NSE 3000	IPS_THREAT_DETECTED	Intrusion attempt from [103.29.... View Details	Tue Aug 16 2022 02:59:52 UT
Notify	NETWORK Status	Device NSE 3000	STATUS_UP	Device is online. View Details	Mon Aug 15 2022 23:57:42 UT
Notify	SECURITY Status	Device NSE 3000	IPS_RULESET_UPDATE	Updated rule [snort-vrt]. Total [1... View Details	Mon Aug 15 2022 17:00:59 UT
Notify	SECURITY Status	Device NSE 3000	IPS_RULESET_UPDATE	Updated rule [snort-vrt]. Total [1... View Details	Mon Aug 15 2022 05:00:57 U
Notify	SECURITY Status	Device NSE 3000	IPS_THREAT_DETECTED	Intrusion attempt from [2.57.12... View Details	Sun Aug 14 2022 18:22:04 UT
Notify	SECURITY Status	Device NSE 3000	IPS_RULESET_UPDATE	Updated rule [snort-vrt]. Total [1... View Details	Sun Aug 14 2022 17:01:00 UTC
Notify	SECURITY Status	Device NSE 3000	IPS_THREAT_DETECTED	Intrusion attempt from [2.57.12... View Details	Sun Aug 14 2022 14:43:39 UT
Notify	SECURITY Status	Device NSE 3000	IPS_THREAT_DETECTED	Intrusion attempt from [2.57.12... View Details	Sun Aug 14 2022 08:23:34 UT

Showing 1 - 10 Total: 186 | 10 | Previous | 1 2 3 4 5 ... 19 | Next

Event Details

Name	IPS_THREAT_DETECTED
Severity	Notify
Message	Intrusion attempt from [192.168.0.101:55037] to [209.53.113.223:80] [1:26287:6] [APP-DETECT Absolute Software Computrace outbound connection - search.namequery.com] Classification [misc-activity] Priority [3] Protocol [TCP]
Event Time	Wed Aug 17 2022 02:32:58 UTC -0700
MAC	30:CB:C7:70:04:18
Source Device (MAC)	-
Category	SECURITY
Device Type	NSE 3000
Mode	Security Gateway
Model	NSE 3000
Device Name	NSE-700418
Age	0d 12h 45m

Security Gateway

A1 ICT Distribucija

Upravljanje cnMaestro in cnMaestro X

Cambium Networks cnMaestro management

cnMaestro
Cloud controller

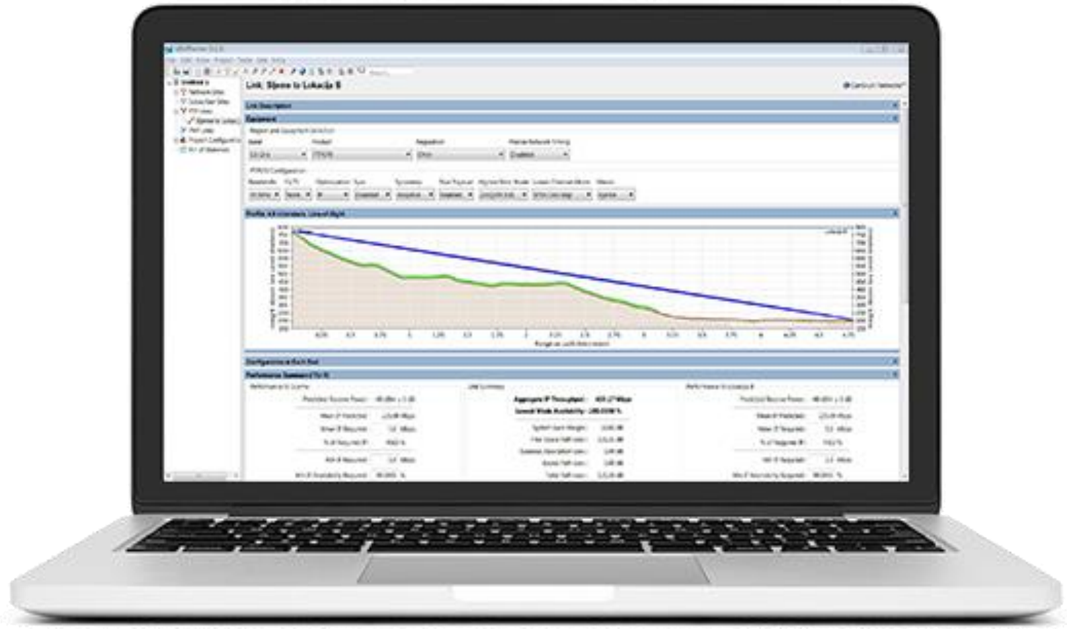
cnMaestro
Image for virtualization

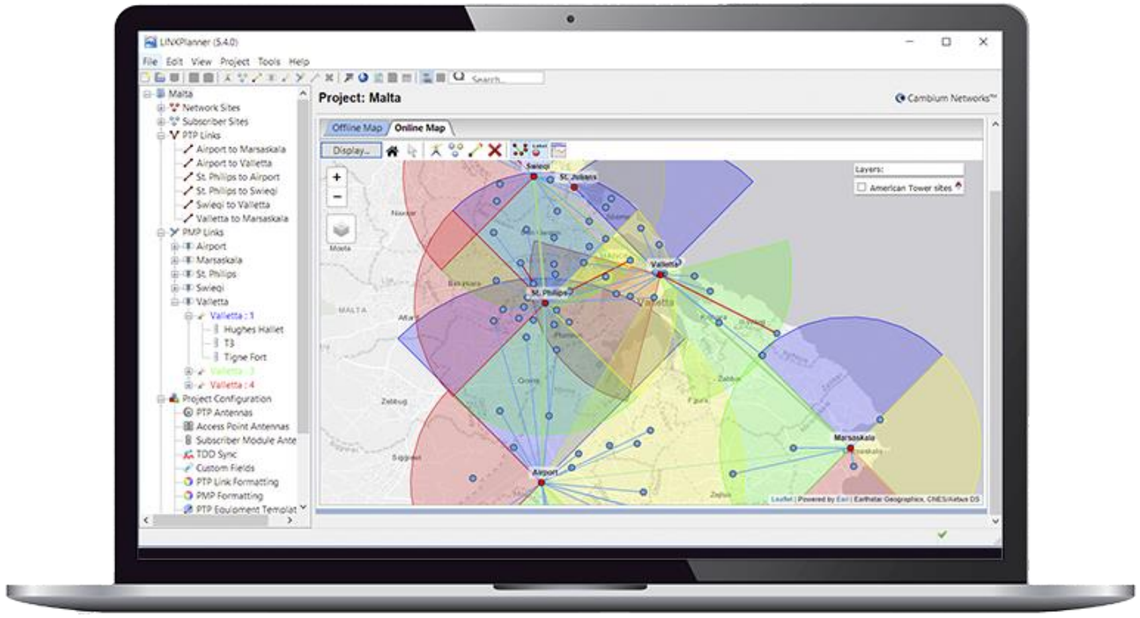
Wi-Fi Designer Planning Tool

- Online orodje postivitev za Cambium Enterprise WiFi
- Enostavno za uporabo
- Brezplačno
- Ustvarite seznam opreme za implementacijo

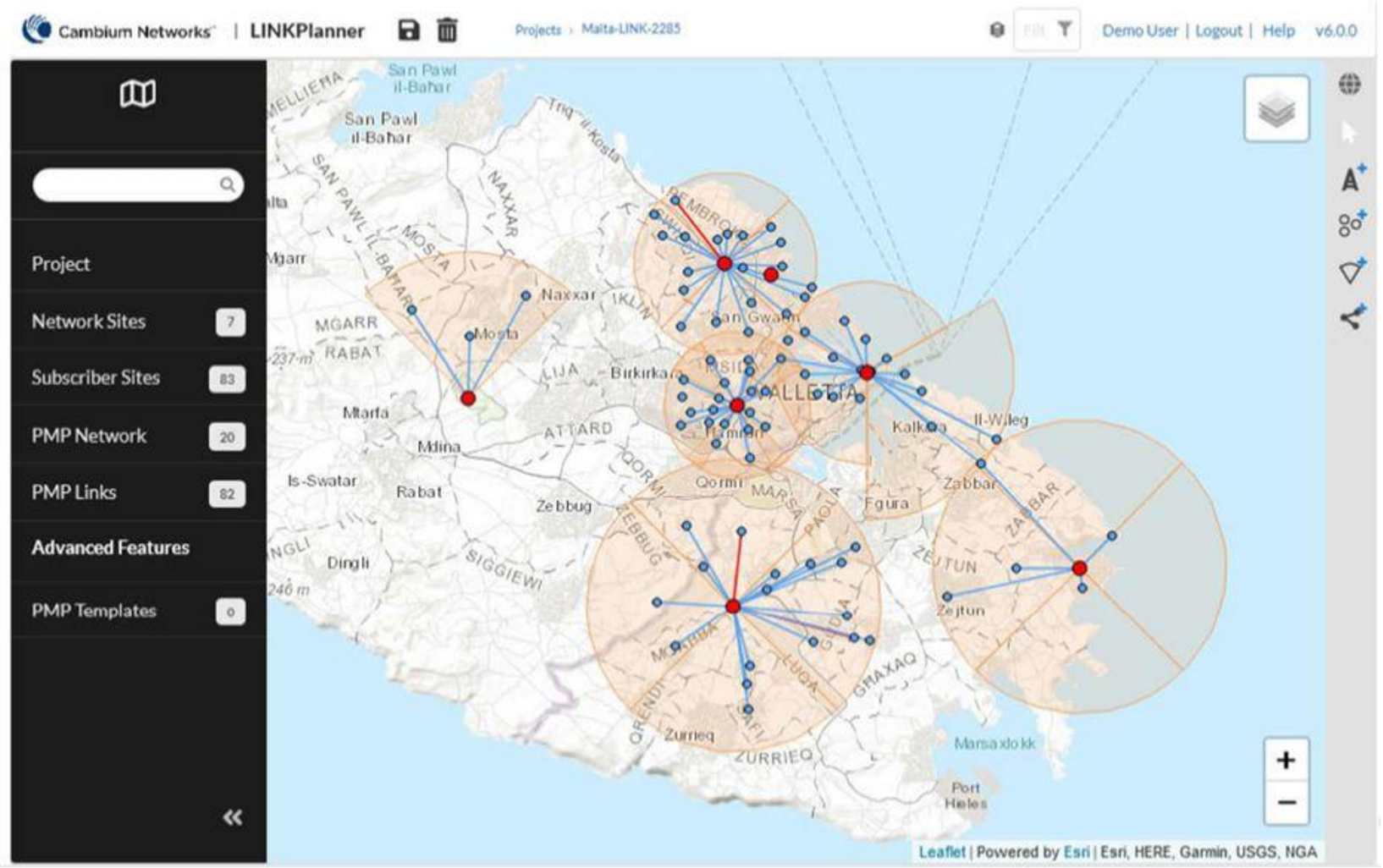
Cambium LinkPlanner

- LINKPlanner omogoča pregled scenarijev „kaj če“ – ti bazirajo na geografiji: razdalja, višina oddajnikov, moč oddajanja in ostali faktorji vplivajo na učinkovitost povezave.





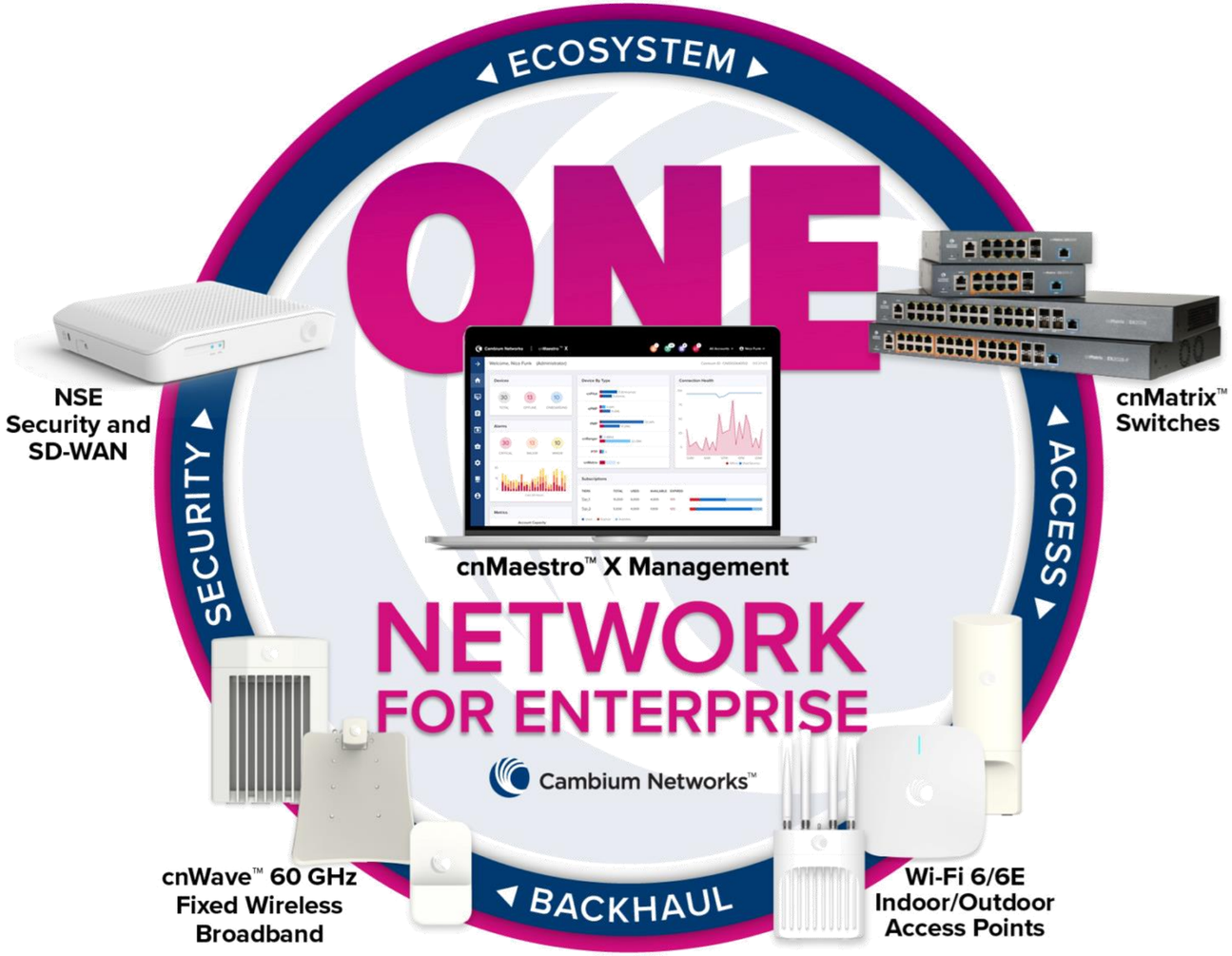
LinkPlanner Cloud



https://lp.cambiumnetworks.com

DEMO

Eno omrežje, ena varnost, ena IT izkušnja



ENO omrežje
- Wi-Fi, stikala, security, SD-WAN
- En pogled upravljanja

Predvidljivo delovanje
- Dolg doseg, velika gostota naprav
- Optimizacija aplikacij

Operativna odličnost
- Zagotovljeno delovanje
- Avtomatizacija

Ekonomičnost
- Manj opreme
- Nižji TCO

Več informacij o A1 ICT Distribuciji

Cambium Networks™

A1 ICT Distribucija

varnostne-resitve.si

ict-partners@A1.si

Cambium Networks™

PORT DESIGNS / PORT CONNECT

WITH secure · STORMSHIELD · VECTRA SECURITY THAT THINKS · vade · WALLIX CYBERSECURITY SIMPLIFIED · iStor.swiss · COMMSCOPE RUCKUS · F-Secure · censornet · ENERGY LOGSERVER

Celovite IT rešitve
za vaše podjetje
Eno omrežje,
ena varnost,
ena IT izkušnja
A1 ICT Distribucija
SODELUJTE V NAGRADNEM KVIZU IN
OSVOJITE BOGATE NAGRADE
Sodelujte v
nagradni igri
Cambium Networks
A1
Eno omrežje,
ena varnost,
ena IT izkušnja
PORT CONNECT
Professional Charging Tower

Thank you

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