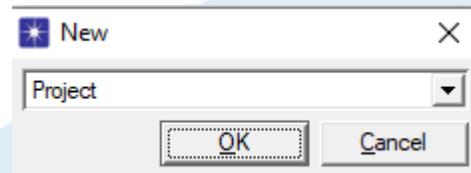
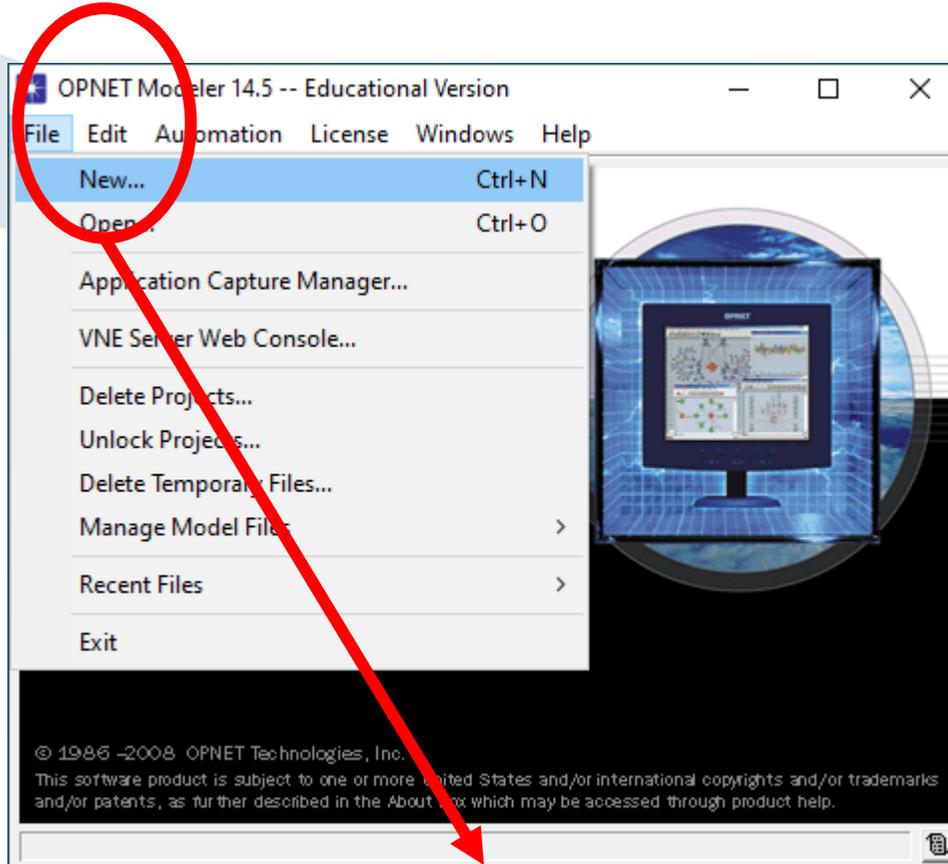


CEMC606: Industrial Networks

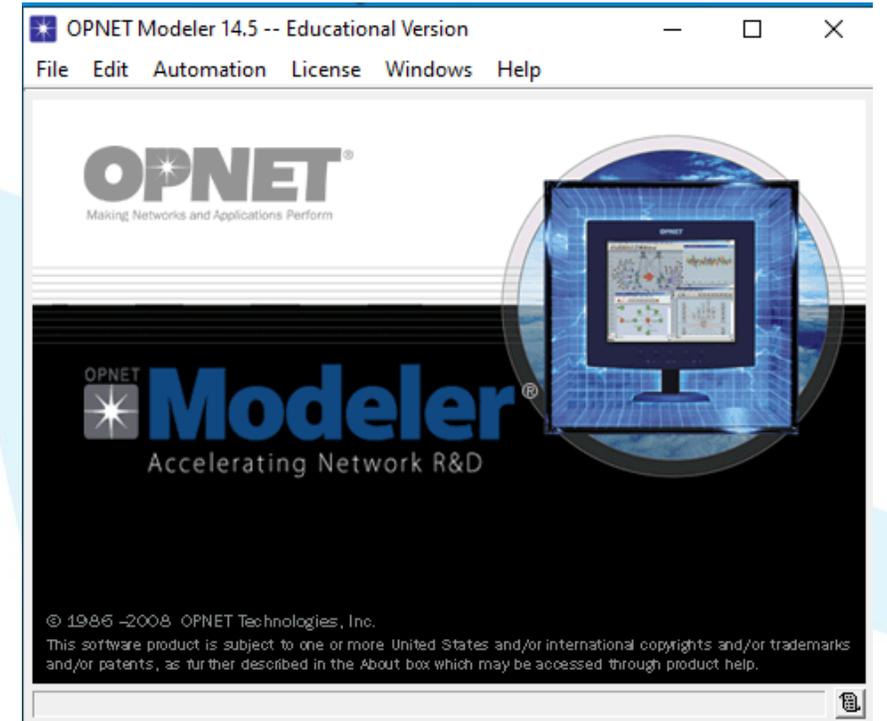
Lecture 5: Wireless LAN Networks-2

Eng. Aya Kherbek
Eng. Baher Kherbek
Faculty of Engineering
Department of Mechatronics
Manara University

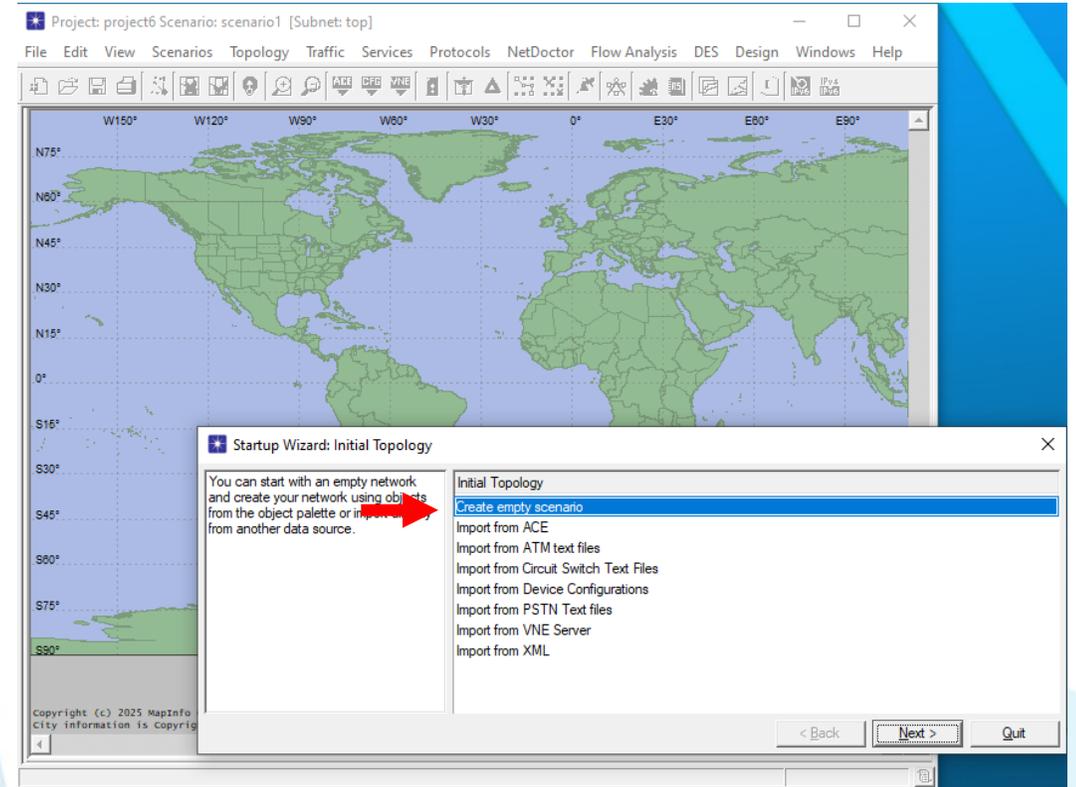
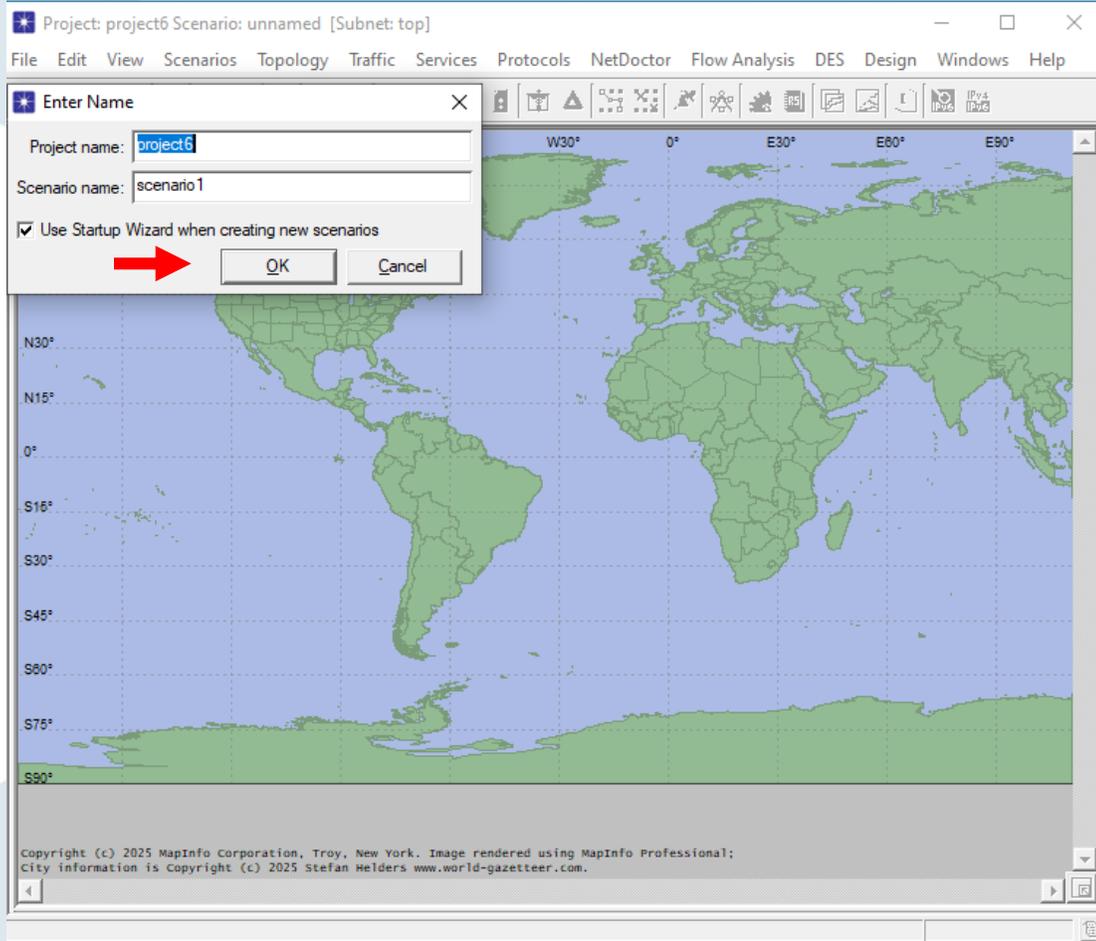


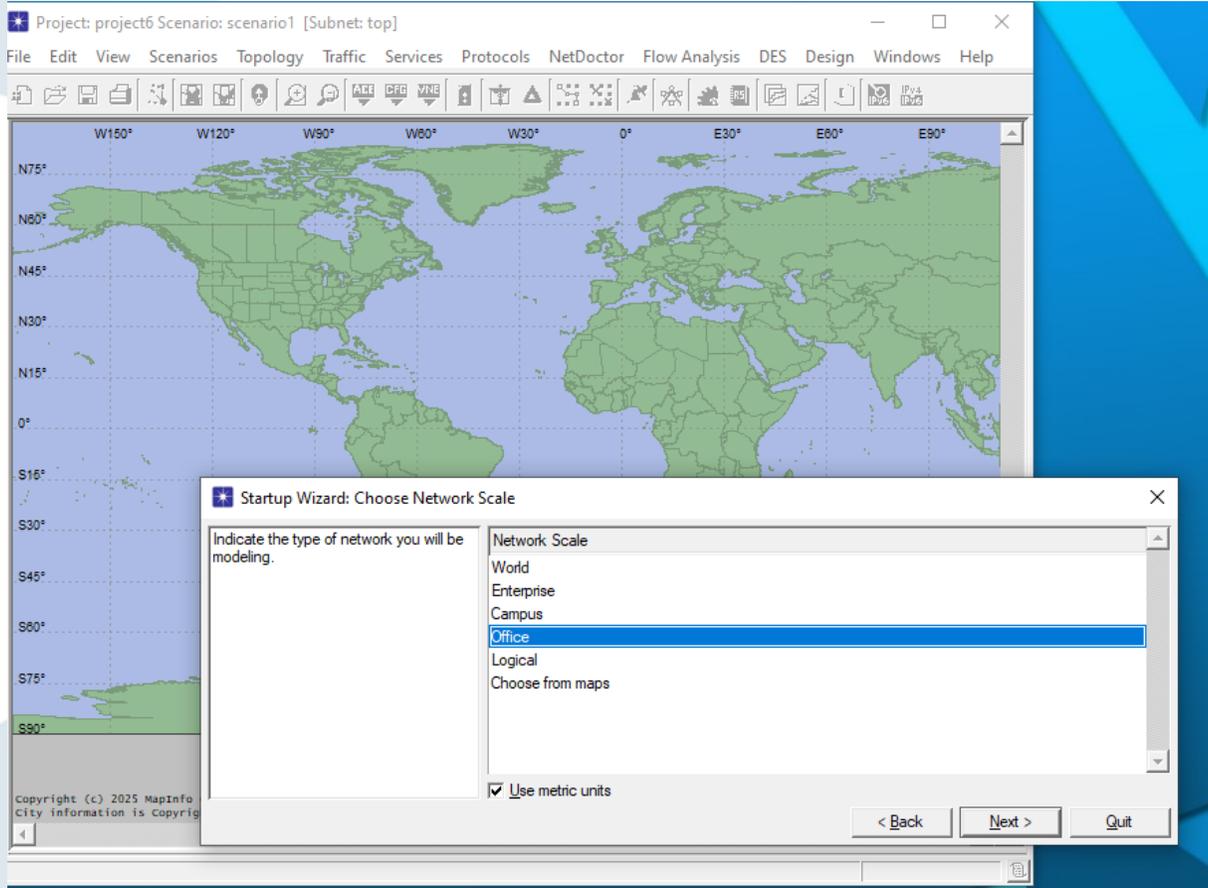


بداية نبدأ بفتح واجهة البرنامج الأساسية لإنشاء ملف جديد فتكون كما يلي



نقوم بإنشاء مشروع جديد ثم نختار إنشاء سيناريو فارغ لتوصيف مسألة العمل بداخلها





بعدها نختار حجم المكان الذي تمتد عليه
الشبكة وفي حالتنا سنعمل على مساحة مكتب



تمرين – تحليل أداء الشبكات اللاسلكية

قم بإنشاء شبكة لاسلكية محلية تمتد على مساحة جغرافية 100 متر على المحور x و 100 متر على المحور y بحيث تتكون الشبكة من 13 حاسوب موصول مع نقطة الوصول الأولى 6 و الثانية 7 حواسيب مع الأخذ بعين الاعتبار التوصيلات بين السيرفر و نقطة الوصول و السويتش بالإضافة إلى أن الكابلات من نوع كابلات محورية. الشبكة المحلية تعمل على المعيار 802.11g نعمل لكل المستخدمين في الشبكة التطبيق

File Transfer

البارامترات التي سوف يتم دراستها هي كالتالي:

- Throughput (bits/sec).

- التأخير Delay(sec) ضمن wireless lan.

وناقش ما يلي:

بالنظر للتأخير ماذا تستنتج؟ - إذا علمت أن مدة المحاكاة 30 دقيقة، وأن الطرفيات غير

متحركة



المساحة التي تتوزع عليها شبكة المكتب

Startup Wizard: Specify Size

Specify the units you wish to use (miles, kilometers, etc.) and the extent of your network.

Size:

X span: 100

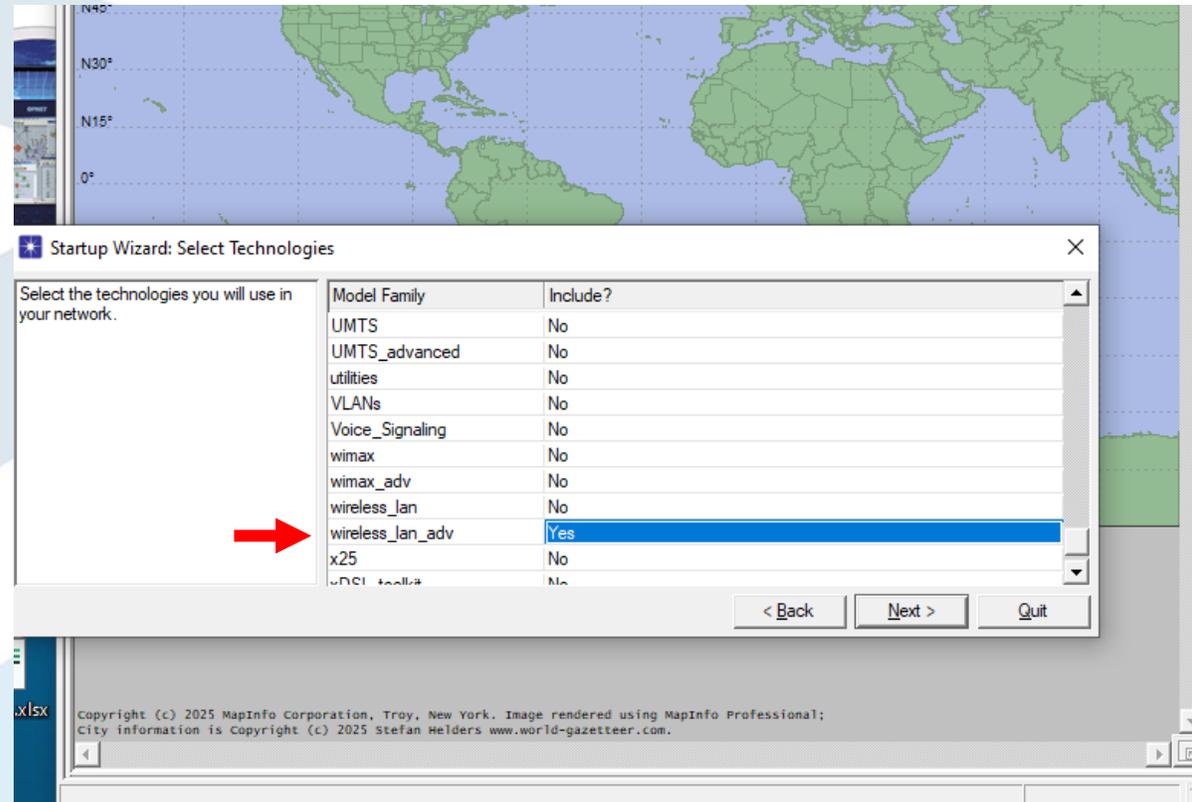
Y span: 100

Units: Meters

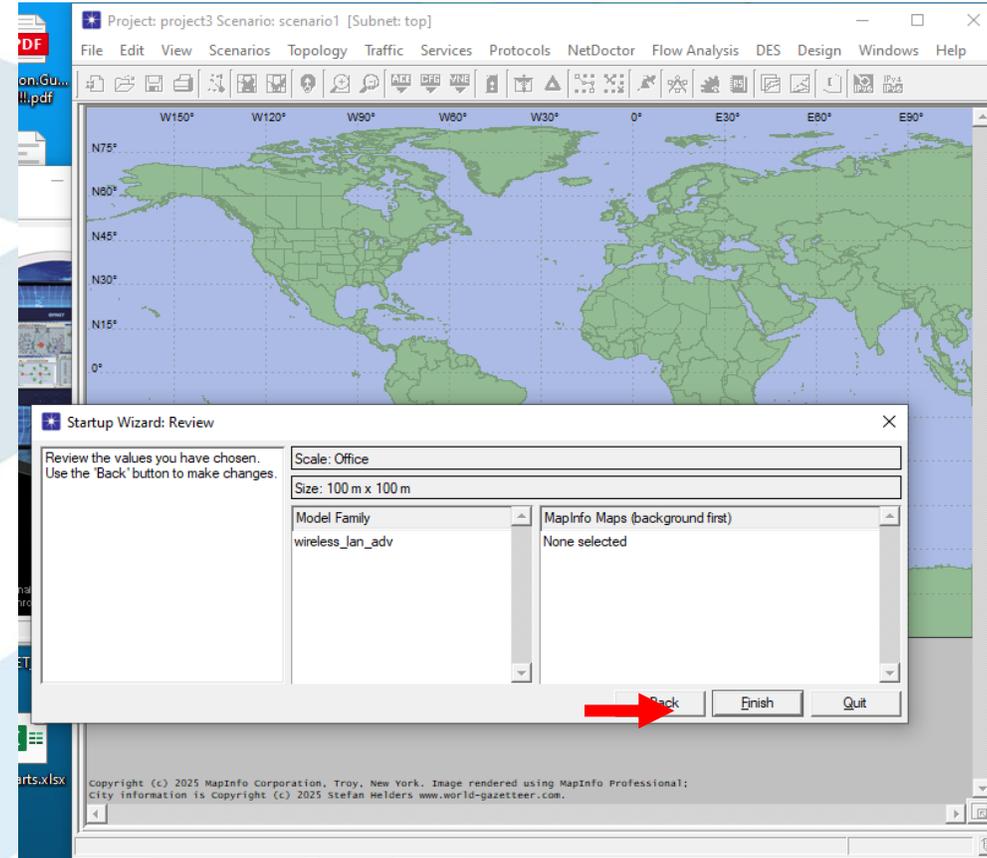
< Back Next > Quit



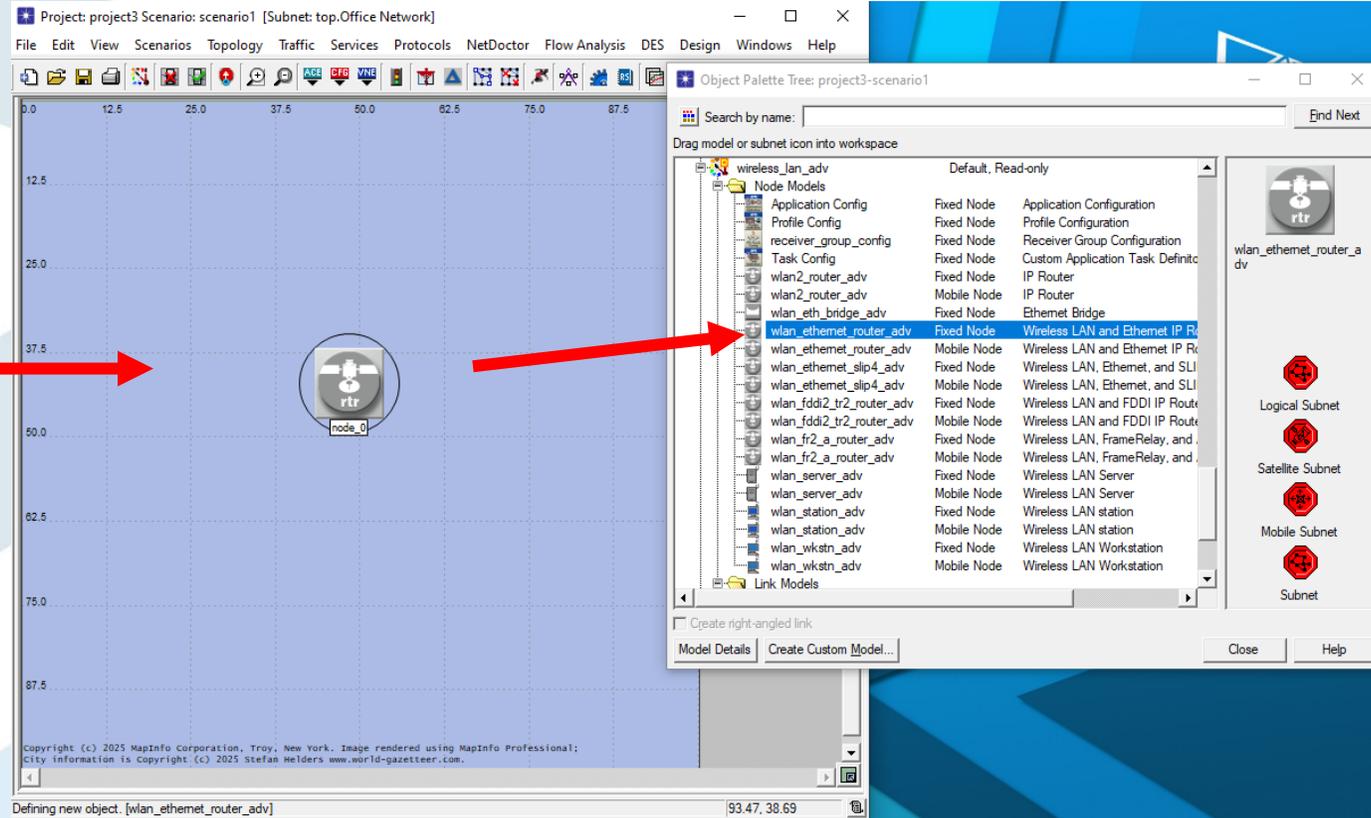
اختيار تكنولوجيا النقل wireless_lan_adv



إنهاء إعداد بيانات الشبكة الأساسية



مساحة العمل الأساسية لبدء تصميم الشبكة مع شجرة العناصر



نضع معرفات الشبكة وتجهيزاتها المرغوبة هنا

The screenshot shows a network simulation software interface. The main workspace displays a grid of nodes labeled node_0 through node_14. Some nodes are represented by laptop icons, while others are routers (rtr). The interface includes a menu bar (File, Edit, View, Scenarios, Topology, Traffic, Services, Protocols, NetDoctor, Flow Analysis, DES, Design, Windows, Help) and a toolbar. An 'Object Palette Tree' window is open on the right, showing a list of network components. A red arrow points to the 'wlan_wkstn_adv' component in the list. The status bar at the bottom indicates 'Defining new object. [wlan_wkstn_adv]' and coordinates '93.30, 44.72'.

| Component Name | Node Type | Configuration |
|---------------------------|-------------|-----------------------------------|
| wireless_lan_adv | Default | Read-only |
| Application Config | Fixed Node | Application Configuration |
| Profile Config | Fixed Node | Profile Configuration |
| receiver_group_config | Fixed Node | Receiver Group Configuration |
| Task Config | Fixed Node | Custom Application Task Definitio |
| wlan2_router_adv | Fixed Node | IP Router |
| wlan2_router_adv | Mobile Node | IP Router |
| wlan_eth_bridge_adv | Fixed Node | Ethernet Bridge |
| wlan_ethernet_router_adv | Fixed Node | Wireless LAN and Ethernet IP R |
| wlan_ethernet_router_adv | Mobile Node | Wireless LAN and Ethernet IP R |
| wlan_ethernet_slip4_adv | Fixed Node | Wireless LAN, Ethernet, and SLI |
| wlan_ethernet_slip4_adv | Mobile Node | Wireless LAN, Ethernet, and SLI |
| wlan_fddi2_tr2_router_adv | Fixed Node | Wireless LAN and FDDI IP Route |
| wlan_fddi2_tr2_router_adv | Mobile Node | Wireless LAN and FDDI IP Route |
| wlan_fr2_a_router_adv | Fixed Node | Wireless LAN, FrameRelay, and |
| wlan_fr2_a_router_adv | Mobile Node | Wireless LAN, FrameRelay, and |
| wlan_server_adv | Fixed Node | Wireless LAN Server |
| wlan_server_adv | Mobile Node | Wireless LAN Server |
| wlan_station_adv | Fixed Node | Wireless LAN station |
| wlan_station_adv | Mobile Node | Wireless LAN station |
| wlan_wkstn_adv | Fixed Node | Wireless LAN Workstation |
| wlan_wkstn_adv | Mobile Node | Wireless LAN Workstation |

نختار
Workstations
من نمط
fixed بحيث
تكون ثابتة
في مكانها



Project: project3 Scenario: scenario1 [Subnet: top.Office Network]

File Edit View Scenarios Topology Traffic Services Protocols NetDoctor Flow Analysis DES Design Windows Help

Object Palette Tree: project3-scenario1

Search by name: [] Find Next

Drag model or subnet icon into workspace

| ethernet | | Read-only |
|--------------------------|-------------|-----------------------------------|
| Node Models | | |
| Application Config | Fixed Node | Application Configuration |
| Cisco WS-C5000 | | |
| ethernet16_bridge | Fixed Node | Ethernet Bridge |
| ethernet16_hub | Fixed Node | Ethernet Hub |
| ethernet16_layer4_switch | Fixed Node | Ethernet Switch |
| ethernet16_switch | Fixed Node | Ethernet Switch |
| ethernet32_switch | Fixed Node | Ethernet Switch |
| ethernet64_switch | Fixed Node | Ethernet Switch |
| ethernet_cache_server | Fixed Node | Ethernet Server |
| ethernet_printer | Fixed Node | Ethernet Printer |
| ethernet_server | Fixed Node | Ethernet Server |
| ethernet_station | Fixed Node | Ethernet Station |
| ethernet_wkstn | Fixed Node | Ethernet Workstation |
| IP Attribute Config | Fixed Node | IP-layer Attribute Definer |
| Profile Config | Fixed Node | Profile Configuration |
| Task Config | Fixed Node | Custom Application Task Definiton |
| Link Models | | |
| 1000BaseX | Duplex Link | Ethernet 1000BaseX |
| 100BaseT | Duplex Link | Ethernet 100BaseT |
| 10BaseT | Duplex Link | Ethernet 10BaseT |
| 10Gbps_Ethernet | Duplex Link | Ethernet 10Gbps Link |
| ethernet advanced | | Read-only |

ethernet16_switch

Logical Subnet

Satellite Subnet

Mobile Subnet

Subnet

Create right-angled link

Model Details Create Custom Model...

Close Help

Defining new object. [ethernet16_switch] 108.71, 102.35

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3:18 PM 30/11/2025

Switch لربط
نقاط الوصول
مع السيرفر

Switch نختاره
من قائمة
في ethernet
شجرة الأدوات



Project: project3 Scenario: scenario1 [Subnet: top.Office Network]

File Edit View Scenarios Topology Traffic Services Protocols NetDoctor Flow Analysis DES Design Windows Help

Object Palette Tree: project3-scenario1

Search by name: Find Next

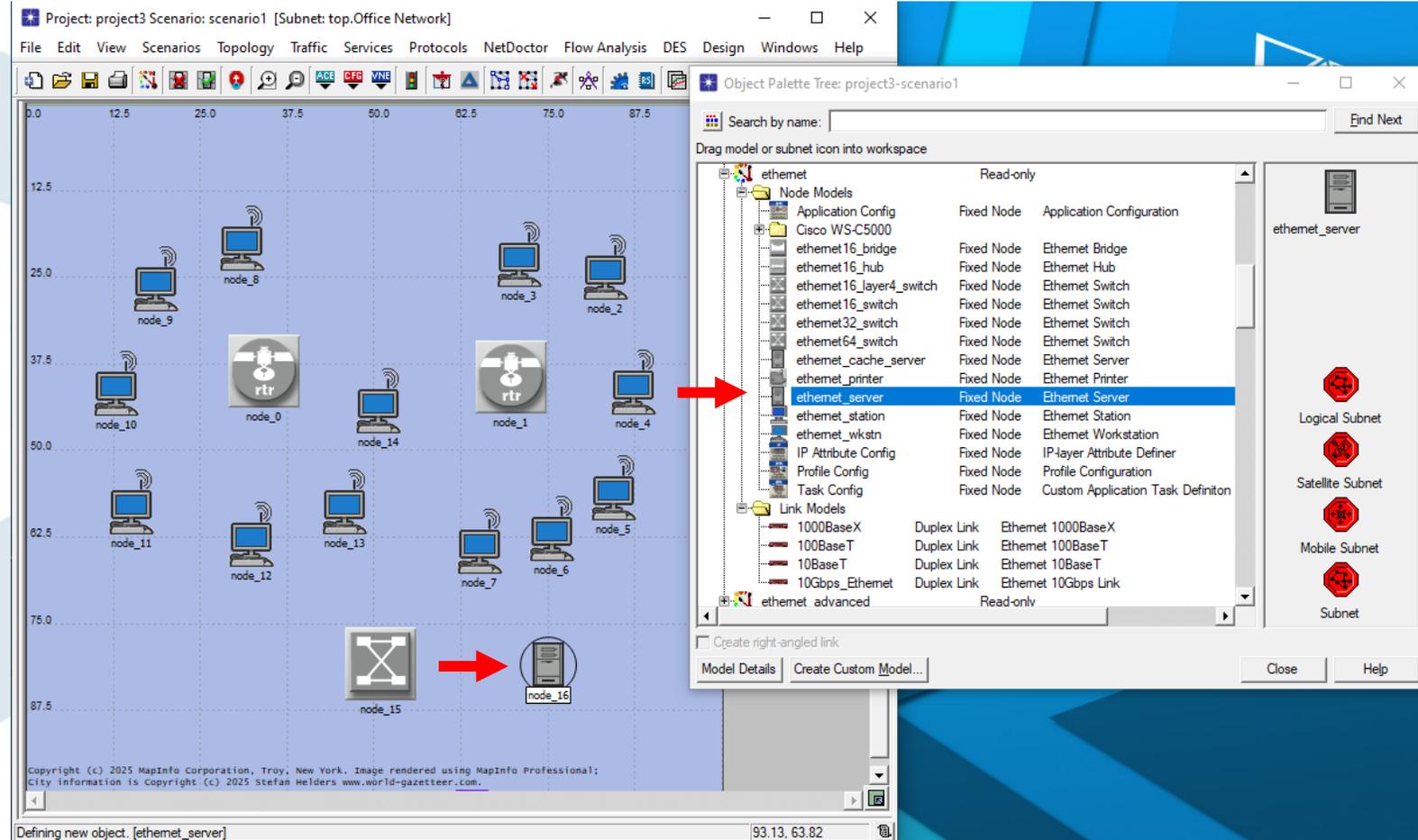
Drag model or subnet icon into workspace

| ethernet | | Read-only |
|--------------------------|-------------------|-----------------------------------|
| Node Models | | |
| Application Config | Fixed Node | Application Configuration |
| Cisco WS-C5000 | | |
| ethernet16_bridge | Fixed Node | Ethernet Bridge |
| ethernet16_hub | Fixed Node | Ethernet Hub |
| ethernet16_layer4_switch | Fixed Node | Ethernet Switch |
| ethernet16_switch | Fixed Node | Ethernet Switch |
| ethernet32_switch | Fixed Node | Ethernet Switch |
| ethernet64_switch | Fixed Node | Ethernet Switch |
| ethernet_cache_server | Fixed Node | Ethernet Server |
| ethernet_printer | Fixed Node | Ethernet Printer |
| ethernet_server | Fixed Node | Ethernet Server |
| ethernet_station | Fixed Node | Ethernet Station |
| ethernet_wkstn | Fixed Node | Ethernet Workstation |
| IP Attribute Config | Fixed Node | IP-layer Attribute Definer |
| Profile Config | Fixed Node | Profile Configuration |
| Task Config | Fixed Node | Custom Application Task Definiton |
| Link Models | | |
| 1000BaseX | Duplex Link | Ethernet 1000BaseX |
| 100BaseT | Duplex Link | Ethernet 100BaseT |
| 10BaseT | Duplex Link | Ethernet 10BaseT |
| 10Gbps_Ethernet | Duplex Link | Ethernet 10Gbps Link |
| ethernet advanced | | Read-only |

Create right-angled link

Model Details Create Custom Model... Close Help

Defining new object. [ethernet_server] 93.13, 63.82



نختار السيرفر
اذي سنقوم
بتفعيل البروفایل
عليه و التطبيق



Project: project3 Scenario: scenario1 [Subnet: top.Office Network]

File Edit View Scenarios Topology Traffic Services Protocols NetDoctor Flow Analysis DES Design Windows Help

Object Palette Tree: project3-scenario1

Search by name: Find Next

Drag model or subnet icon into workspace

| Model Name | Type | Configuration |
|--------------------------|-------------|-----------------------------------|
| ethernet | Read-only | |
| Node Models | | |
| Application Config | Fixed Node | Application Configuration |
| Cisco WS-C5000 | Fixed Node | |
| ethernet16_bridge | Fixed Node | Ethernet Bridge |
| ethernet16_hub | Fixed Node | Ethernet Hub |
| ethernet16_layer4_switch | Fixed Node | Ethernet Switch |
| ethernet16_switch | Fixed Node | Ethernet Switch |
| ethernet32_switch | Fixed Node | Ethernet Switch |
| ethernet64_switch | Fixed Node | Ethernet Switch |
| ethernet_cache_server | Fixed Node | Ethernet Server |
| ethernet_printer | Fixed Node | Ethernet Printer |
| ethernet_server | Fixed Node | Ethernet Server |
| ethernet_station | Fixed Node | Ethernet Station |
| ethernet_wkstn | Fixed Node | Ethernet Workstation |
| IP Attribute Config | Fixed Node | IP-layer Attribute Definer |
| Profile Config | Fixed Node | Profile Configuration |
| Task Config | Fixed Node | Custom Application Task Definiton |
| Link Models | | |
| 1000BaseX | Duplex Link | Ethernet 1000BaseX |
| 100BaseT | Duplex Link | Ethernet 100BaseT |
| 10BaseT | Duplex Link | Ethernet 10BaseT |
| 10Gbps_Ethernet | Duplex Link | Ethernet 10Gbps Link |
| ethernet_advanced | Read-only | |

100BaseT

Logical Subnet

Satellite Subnet

Mobile Subnet

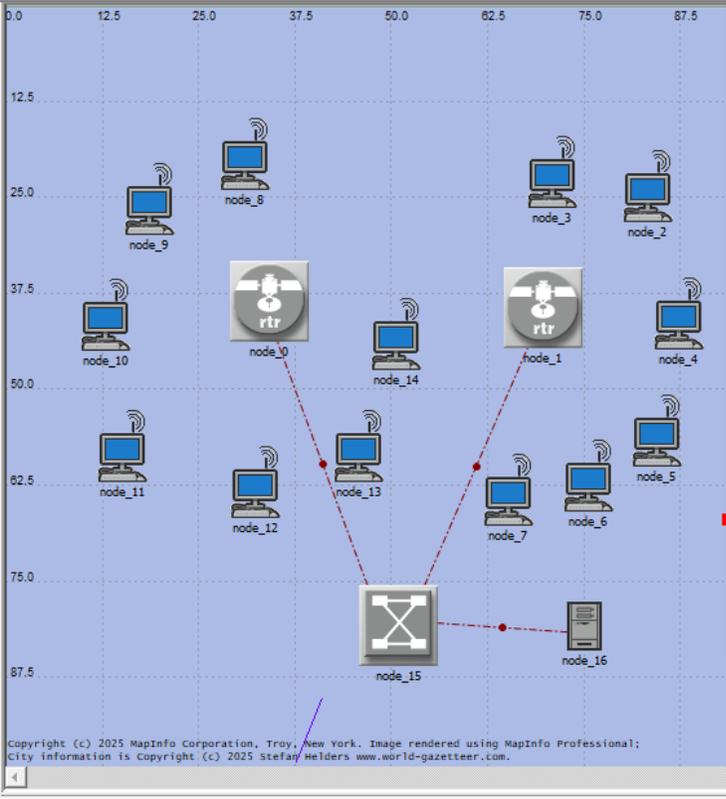
Subnet

Create right-angled link

Model Details Create Custom Model...

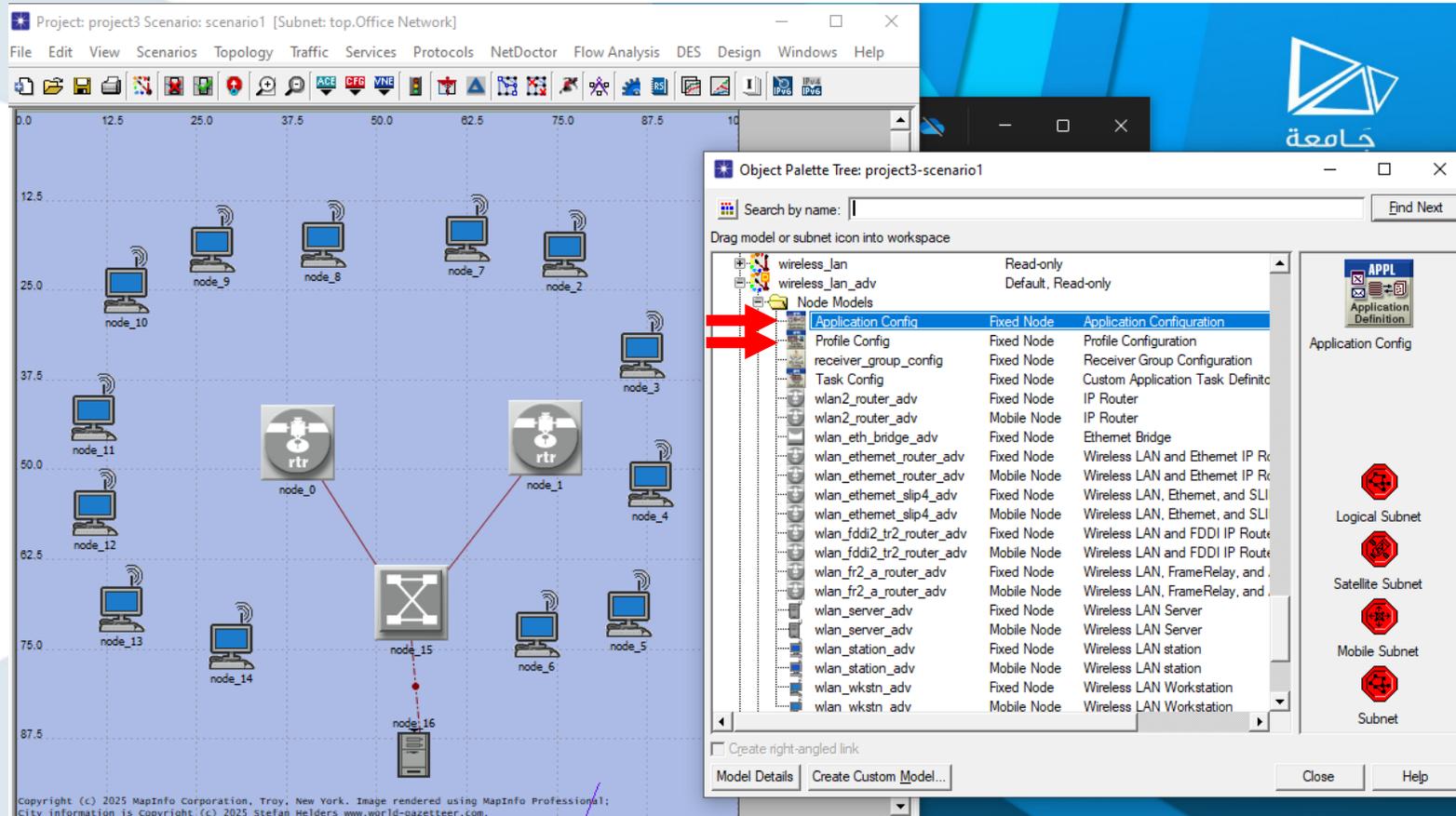
Close Help

Defining new object. [100BaseT] 93.13, 63.82



نصل كل من
الراوترات مع ال
switch و ال
سيرفر باستخدام
وصلات 100BaseT





The screenshot shows the NetDoctor software interface. The main workspace displays a network topology with various nodes (node_0 to node_16) and connections. An 'Object Palette Tree' window is open, showing a list of models and subnets. A red arrow points to the 'wireless_lan_adv' model in the tree. The tree is organized as follows:

| Model Name | Category | Description |
|---------------------------|--------------------|------------------------------------|
| wireless_lan | Read-only | |
| wireless_lan_adv | Default, Read-only | |
| Node Models | | |
| Application Config | Fixed Node | Application Configuration |
| Profile Config | Fixed Node | Profile Configuration |
| receiver_group_config | Fixed Node | Receiver Group Configuration |
| Task Config | Fixed Node | Custom Application Task Definit... |
| wlan2_router_adv | Fixed Node | IP Router |
| wlan2_router_adv | Mobile Node | IP Router |
| wlan_eth_bridge_adv | Fixed Node | Ethernet Bridge |
| wlan_ethernet_router_adv | Fixed Node | Wireless LAN and Ethernet IP R... |
| wlan_ethernet_router_adv | Mobile Node | Wireless LAN and Ethernet IP R... |
| wlan_ethernet_slip4_adv | Fixed Node | Wireless LAN, Ethemet, and SLI... |
| wlan_ethernet_slip4_adv | Mobile Node | Wireless LAN, Ethemet, and SLI... |
| wlan_fddi2_tr2_router_adv | Fixed Node | Wireless LAN and FDDI IP Rote... |
| wlan_fddi2_tr2_router_adv | Mobile Node | Wireless LAN and FDDI IP Rote... |
| wlan_fr2_a_router_adv | Fixed Node | Wireless LAN, FrameRelay, and ... |
| wlan_fr2_a_router_adv | Mobile Node | Wireless LAN, FrameRelay, and ... |
| wlan_server_adv | Fixed Node | Wireless LAN Server |
| wlan_server_adv | Mobile Node | Wireless LAN Server |
| wlan_station_adv | Fixed Node | Wireless LAN station |
| wlan_station_adv | Mobile Node | Wireless LAN station |
| wlan_wkstrn_adv | Fixed Node | Wireless LAN Workstation |
| wlan_wkstrn_adv | Mobile Node | Wireless LAN Workstation |

On the right side of the Object Palette Tree, there is an 'Application Definition' section with a tree structure:

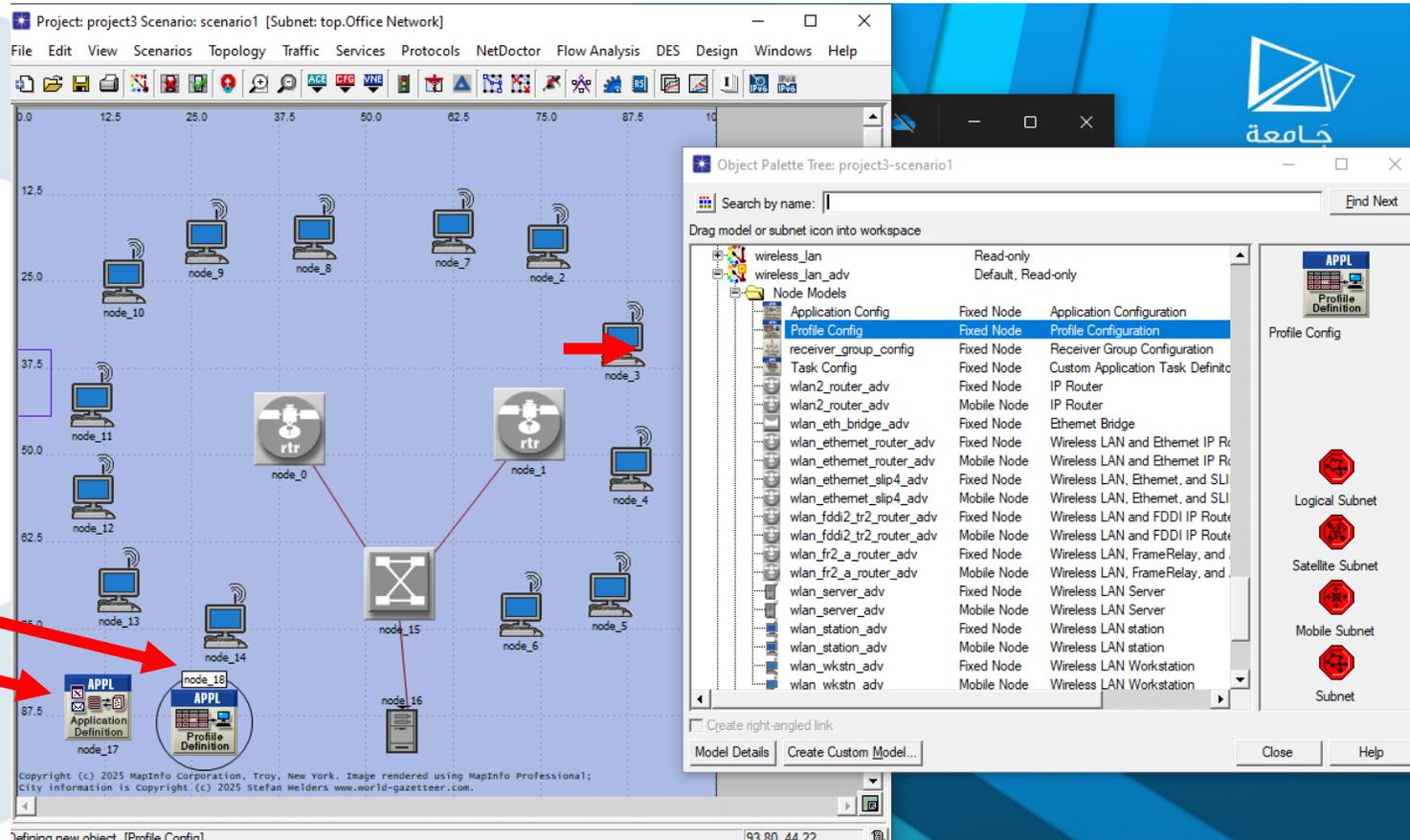
- Application Definition
 - Application Config
 - Logical Subnet
 - Satellite Subnet
 - Mobile Subnet
 - Subnet

ثم نختار معرفات
البروفایل و التطبيق
من شجرة
wireless_lan_adv



Project: project3 Scenario: scenario1 [Subnet: top.Office Network]

File Edit View Scenarios Topology Traffic Services Protocols NetDoctor Flow Analysis DES Design Windows Help



Object Palette Tree: project3-scenario1

Search by name: [] Find Next

Drag model or subnet icon into workspace

| Model Name | Category | Configuration |
|---------------------------|-------------|-----------------------------------|
| wireless_lan | Read-only | Default, Read-only |
| wireless_lan_adv | Read-only | Default, Read-only |
| Node Models | | |
| Application Config | Fixed Node | Application Configuration |
| Profile Config | Fixed Node | Profile Configuration |
| receiver_group_config | Fixed Node | Receiver Group Configuration |
| Task Config | Fixed Node | Custom Application Task Definitio |
| wlan2_router_adv | Fixed Node | IP Router |
| wlan2_router_adv | Mobile Node | IP Router |
| wlan_eth_bridge_adv | Fixed Node | Ethernet Bridge |
| wlan_ethernet_router_adv | Fixed Node | Wireless LAN and Ethernet IP R |
| wlan_ethernet_router_adv | Mobile Node | Wireless LAN and Ethernet IP R |
| wlan_ethernet_slip4_adv | Fixed Node | Wireless LAN, Ethernet, and SLI |
| wlan_ethernet_slip4_adv | Mobile Node | Wireless LAN, Ethernet, and SLI |
| wlan_fddi2_tr2_router_adv | Fixed Node | Wireless LAN and FDDI IP Route |
| wlan_fddi2_tr2_router_adv | Mobile Node | Wireless LAN and FDDI IP Route |
| wlan_fr2_a_router_adv | Fixed Node | Wireless LAN, FrameRelay, and |
| wlan_fr2_a_router_adv | Mobile Node | Wireless LAN, FrameRelay, and |
| wlan_server_adv | Fixed Node | Wireless LAN Server |
| wlan_server_adv | Mobile Node | Wireless LAN Server |
| wlan_station_adv | Fixed Node | Wireless LAN station |
| wlan_station_adv | Mobile Node | Wireless LAN station |
| wlan_wkstn_adv | Fixed Node | Wireless LAN Workstation |
| wlan_wkstn_adv | Mobile Node | Wireless LAN Workstation |

APPL Profile Definition

Profile Config

Logical Subnet

Satellite Subnet

Mobile Subnet

Subnet

Create right-angled link

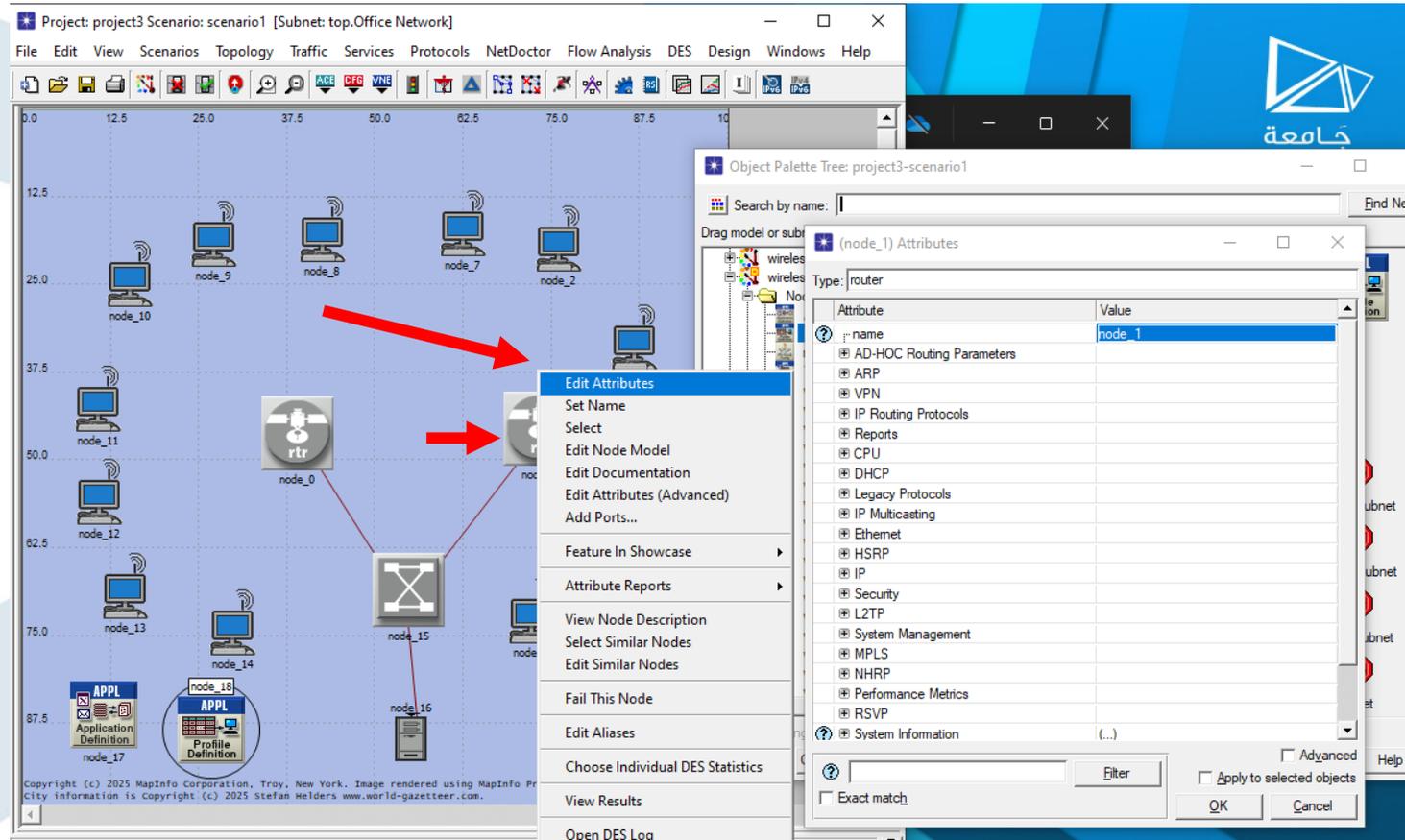
Model Details Create Custom Model...

Close Help

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Defininn new object (Profile Config) 93 80 44 22





The screenshot displays a network simulation environment. The main window shows a network topology with various nodes (node_0 to node_18) and connections. A context menu is open over a node, with 'Edit Attributes' selected. The 'Object Palette Tree' window is visible, showing a search for 'node_1' and a list of attributes for a 'router' type. The 'Attributes' window is also open, showing a table of attributes and values.

| Attribute | Value |
|---------------------------|--------|
| name | node_1 |
| AD-HOC Routing Parameters | |
| ARP | |
| VPN | |
| IP Routing Protocols | |
| Reports | |
| CPU | |
| DHCP | |
| Legacy Protocols | |
| IP Multicasting | |
| Ethernet | |
| HSRP | |
| IP | |
| Security | |
| L2TP | |
| System Management | |
| MPLS | |
| NHRP | |
| Performance Metrics | |
| RSVP | |
| System Information | (...) |



Project: project3 Scenario: scenario1 [Subnet: top.Office Network]

File Edit View Scenarios Topology Traffic Services Protocols NetDoctor Flow Analysis DES Design Windows Help

12.5 25.0 37.5 50.0 62.5 75.0 87.5 100.0

node_10 node_11 node_12 node_13 node_17

(node_1) Attributes

Type: router

| Attribute | Value |
|--|---------------|
| Wireless LAN MAC Address | Auto Assigned |
| Wireless LAN Parameters | (...) |
| BSS Identifier | Auto Assigned |
| Access Point Functionality | Auto Assigned |
| Physical Characteristics | Edit... |
| Data Rate (Mbps) | 11 Mbps |
| Channel Settings | Auto Assigned |
| Transmit Power (W) | 0.005 |
| Packet Reception-Power Threshold (dBm) | -95 |
| Rts Threshold (bytes) | None |
| Fragmentation Threshold (bytes) | None |
| CTS-to-self Option | Enabled |
| Short Retry Limit | 7 |
| Long Retry Limit | 4 |
| AP Beacon Interval (secs) | 0.02 |
| Max Receive Lifetime (secs) | 0.5 |
| Buffer Size (bits) | 256000 |
| Roaming Capability | Disabled |
| Large Packet Processing | Drop |
| PCF Parameters | Disabled |
| HCF Parameters | Not Supported |

Object Palette Tree: project3-scenario1

| Object Name | Node Type | Configuration |
|---------------------------|--------------------|-------------------------------------|
| wireless_lan | Read-only | Default, Read-only |
| wireless_lan_adv | Default, Read-only | |
| Node Models | | |
| Application Config | Fixed Node | Application Configuration |
| Profile Config | Fixed Node | Profile Configuration |
| receiver_group_config | Fixed Node | Receiver Group Configuration |
| Task Config | Fixed Node | Custom Application Task Definition |
| wlan2_router_adv | Fixed Node | IP Router |
| wlan2_router_adv | Mobile Node | IP Router |
| wlan_eth_bridge_adv | Fixed Node | Ethernet Bridge |
| wlan_ethernet_router_adv | Fixed Node | Wireless LAN and Ethernet IP Router |
| wlan_ethernet_router_adv | Mobile Node | Wireless LAN and Ethernet IP Router |
| wlan_ethernet_slip4_adv | Fixed Node | Wireless LAN, Ethernet, and SLIP |
| wlan_ethernet_slip4_adv | Mobile Node | Wireless LAN, Ethernet, and SLIP |
| wlan_fddi2_tr2_router_adv | Fixed Node | Wireless LAN and FDDI IP Router |
| wlan_fddi2_tr2_router_adv | Mobile Node | Wireless LAN and FDDI IP Router |
| wlan_fr2_a_router_adv | Fixed Node | Wireless LAN, FrameRelay, and ATM |
| wlan_fr2_a_router_adv | Mobile Node | Wireless LAN, FrameRelay, and ATM |
| wlan_server_adv | Fixed Node | Wireless LAN Server |
| wlan_server_adv | Mobile Node | Wireless LAN Server |
| wlan_station_adv | Fixed Node | Wireless LAN station |
| wlan_station_adv | Mobile Node | Wireless LAN station |
| wlan_wkstn_adv | Fixed Node | Wireless LAN Workstation |
| wlan_wkstn_adv | Mobile Node | Wireless LAN Workstation |

APPL Profile Definition

Profile Config

Logical Subnet

Satellite Subnet

Mobile Subnet

Subnet

Filter

Apply to selected objects

Exact match

OK Cancel

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علينا تعريف BSS
 معين لنقطة الوصول
 حتى نعرف الأجهزة
 المتصلة على هذا
 الراوتر بقيمة المعرف



Project: project3 Scenario: scenario1 [Subnet: top.Office Network]

File Edit View Scenarios Topology Traffic Services Protocols NetDoctor Flow Analysis DES Design Windows Help

0.0 12.5 25.0 37.5 50.0 62.5 75.0 87.5 100.0

node_10 node_11 node_12 node_13 node_17

(node_1) Attributes

Type: router

| Attribute | Value |
|-------------------------------------|-----------------|
| Wireless LAN MAC Address | Auto Assigned |
| Wireless LAN Parameters | (...) |
| BSS Identifier | 11 |
| Access Point Functionality | Enabled |
| Physical Characteristics | Direct Sequence |
| Data Rate (Mbps) | 11 Mbps |
| Channel Settings | Auto Assigned |
| Transmit Power (W) | 0.005 |
| Packet Reception-Power Threshold... | -95 |
| Rts Threshold (bytes) | None |
| Fragmentation Threshold (bytes) | None |
| CTS-to-self Option | Enabled |
| Short Retry Limit | 7 |
| Long Retry Limit | 4 |
| AP Beacon Interval (secs) | 0.02 |
| Max Receive Lifetime (secs) | 0.5 |
| Buffer Size (bits) | 256000 |
| Roaming Capability | Disabled |
| Large Packet Processing | Drop |
| PCF Parameters | Disabled |
| HCF Parameters | Not Supported |

Object Palette Tree: project3-scenario1

Search by name: [] [Find Next]

Click or subnet icon into workspace

| Model Name | Node Type | Configuration Type |
|---------------------------|--------------------|--|
| wireless_lan | Read-only | Application Configuration |
| wireless_lan_adv | Default, Read-only | Profile Configuration |
| Node Models | | |
| Application Config | Fixed Node | Application Configuration |
| Profile Config | Fixed Node | Profile Configuration |
| receiver_group_config | Fixed Node | Receiver Group Configuration |
| Task Config | Fixed Node | Custom Application Task Definition |
| wlan2_router_adv | Fixed Node | IP Router |
| wlan2_router_adv | Mobile Node | IP Router |
| wlan_eth_bridge_adv | Fixed Node | Ethernet Bridge |
| wlan_ethernet_router_adv | Fixed Node | Wireless LAN and Ethernet IP Router |
| wlan_ethernet_router_adv | Mobile Node | Wireless LAN and Ethernet IP Router |
| wlan_ethernet_slip4_adv | Fixed Node | Wireless LAN, Ethernet, and SLIP |
| wlan_ethernet_slip4_adv | Mobile Node | Wireless LAN, Ethernet, and SLIP |
| wlan_fddi2_tr2_router_adv | Fixed Node | Wireless LAN and FDDI IP Router |
| wlan_fddi2_tr2_router_adv | Mobile Node | Wireless LAN and FDDI IP Router |
| wlan_fr2_a_router_adv | Fixed Node | Wireless LAN, FrameRelay, and Ethernet |
| wlan_fr2_a_router_adv | Mobile Node | Wireless LAN, FrameRelay, and Ethernet |
| wlan_server_adv | Fixed Node | Wireless LAN Server |
| wlan_server_adv | Mobile Node | Wireless LAN Server |
| wlan_station_adv | Fixed Node | Wireless LAN station |
| wlan_station_adv | Mobile Node | Wireless LAN station |
| wlan_wkstn_adv | Fixed Node | Wireless LAN Workstation |
| wlan_wkstn_adv | Mobile Node | Wireless LAN Workstation |

Profile Config

APPL Profile Definition

Logical Subnet

Satellite Subnet

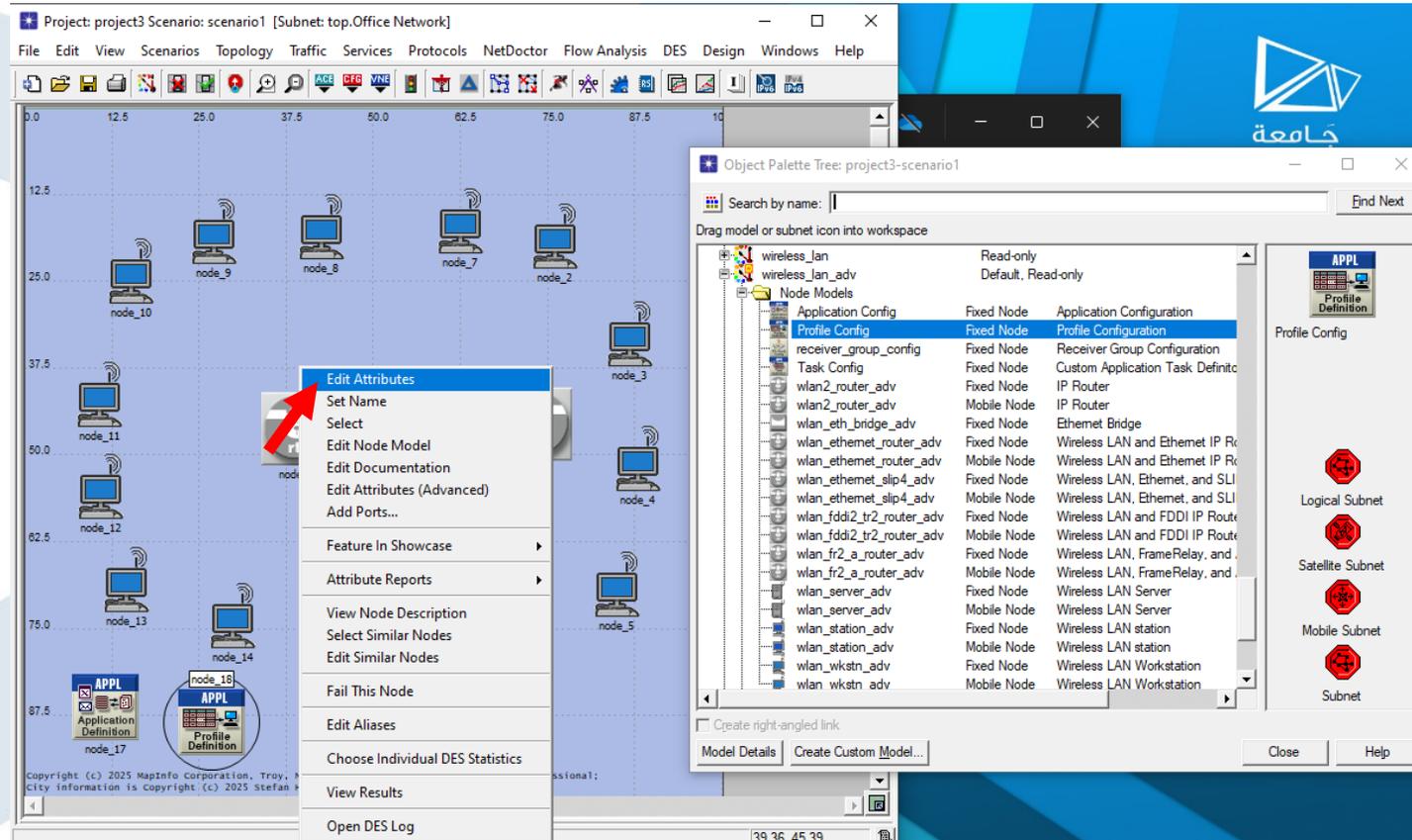
Mobile Subnet

Subnet

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نعطيه قيمة 1
للراوتر الأول





The screenshot displays the NetDoctor software interface. The main workspace shows a network topology with nodes labeled node_2 through node_18. A context menu is open over node_10, with the 'Edit Attributes' option highlighted by a red arrow. An 'Object Palette Tree' window is also open, showing a list of network models and their configurations. The tree is organized into categories like 'Application Config', 'Fixed Node', and 'Profile Configuration'. A search bar is visible at the top of the palette tree.

| Model Name | Category | Configuration |
|---------------------------|-------------|----------------------------------|
| wireless_lan | Read-only | Default, Read-only |
| wireless_lan_adv | Read-only | Default, Read-only |
| Node Models | | |
| Application Config | Fixed Node | Application Configuration |
| Profile Config | Fixed Node | Profile Configuration |
| receiver_group_config | Fixed Node | Receiver Group Configuration |
| Task Config | Fixed Node | Custom Application Task Definito |
| wlan2_router_adv | Fixed Node | IP Router |
| wlan2_router_adv | Mobile Node | IP Router |
| wlan_eth_bridge_adv | Fixed Node | Ethernet Bridge |
| wlan_ethernet_router_adv | Fixed Node | Wireless LAN and Ethernet IP R |
| wlan_ethernet_router_adv | Mobile Node | Wireless LAN and Ethernet IP R |
| wlan_ethernet_slip4_adv | Fixed Node | Wireless LAN, Ethernet, and SLI |
| wlan_ethernet_slip4_adv | Mobile Node | Wireless LAN, Ethernet, and SLI |
| wlan_fddi2_tr2_router_adv | Fixed Node | Wireless LAN and FDDI IP Rote |
| wlan_fddi2_tr2_router_adv | Mobile Node | Wireless LAN and FDDI IP Rote |
| wlan_fr2_a_router_adv | Fixed Node | Wireless LAN, FrameRelay, and |
| wlan_fr2_a_router_adv | Mobile Node | Wireless LAN, FrameRelay, and |
| wlan_server_adv | Fixed Node | Wireless LAN Server |
| wlan_server_adv | Mobile Node | Wireless LAN Server |
| wlan_station_adv | Fixed Node | Wireless LAN station |
| wlan_station_adv | Mobile Node | Wireless LAN station |
| wlan_wkstn_adv | Fixed Node | Wireless LAN Workstation |
| wlan_wkstn_adv | Mobile Node | Wireless LAN Workstation |

الراوتر 2



Project: project3 Scenario: scenario1 [Subnet: top.Office Network]

File Edit View Scenarios Topology Traffic Services Protocols NetDoctor Flow Analysis DES Design Windows Help

Object Palette Tree: project3-scenario1

Search by name: End Next

Drag model or subnet icon into workspace

(node_0) Attributes

Type: router

| Attribute | Value |
|--|-----------------|
| Wireless LAN MAC Address | Auto Assigned |
| Wireless LAN Parameters | (...) |
| BSS Identifier | 8 |
| Access Point Functionality | Enabled |
| Physical Characteristic | Direct Sequence |
| Data Rate (Mbps) | 11 Mbps |
| Channel Settings | Auto Assigned |
| Transmit Power (W) | 0.005 |
| Packet Reception-Power Threshold (dBm) | -95 |
| Rts Threshold (bytes) | None |
| Fragmentation Threshold (bytes) | None |
| CTS-to-self Option | Enabled |
| Short Retry Limit | 7 |
| Long Retry Limit | 4 |
| AP Beacon Interval (secs) | 0.02 |
| Max Receive Lifetime (secs) | 0.5 |
| Buffer Size (bits) | 256000 |
| Roaming Capability | Disabled |
| Large Packet Processing | Drop |
| PCF Parameters | Disabled |
| HCF Parameters | Not Supported |

Read-only Default, Read-only

| Fixed Node | Application Configuration |
|-------------|-----------------------------------|
| Fixed Node | Profile Configuration |
| Fixed Node | Receiver Group Configuration |
| Fixed Node | Custom Application Task Definitio |
| Fixed Node | IP Router |
| Mobile Node | IP Router |
| Fixed Node | Ethernet Bridge |
| Fixed Node | Wireless LAN and Ethernet IP Ro |
| Mobile Node | Wireless LAN and Ethernet IP Ro |
| Fixed Node | Wireless LAN, Ethernet, and SLI |
| Mobile Node | Wireless LAN, Ethernet, and SLI |
| Fixed Node | Wireless LAN and FDDI IP Rout |
| Mobile Node | Wireless LAN and FDDI IP Rout |
| Fixed Node | Wireless LAN, FrameRelay, and |
| Mobile Node | Wireless LAN, FrameRelay, and |
| Fixed Node | Wireless LAN Server |
| Mobile Node | Wireless LAN Server |
| Fixed Node | Wireless LAN station |
| Mobile Node | Wireless LAN station |
| Fixed Node | Wireless LAN Workstation |
| Mobile Node | Wireless LAN Workstation |

APPL Profile Definition

Profile Config

Logical Subnet

Satellite Subnet

Mobile Subnet

Subnet

Close Help

Advanced

Apply to selected objects

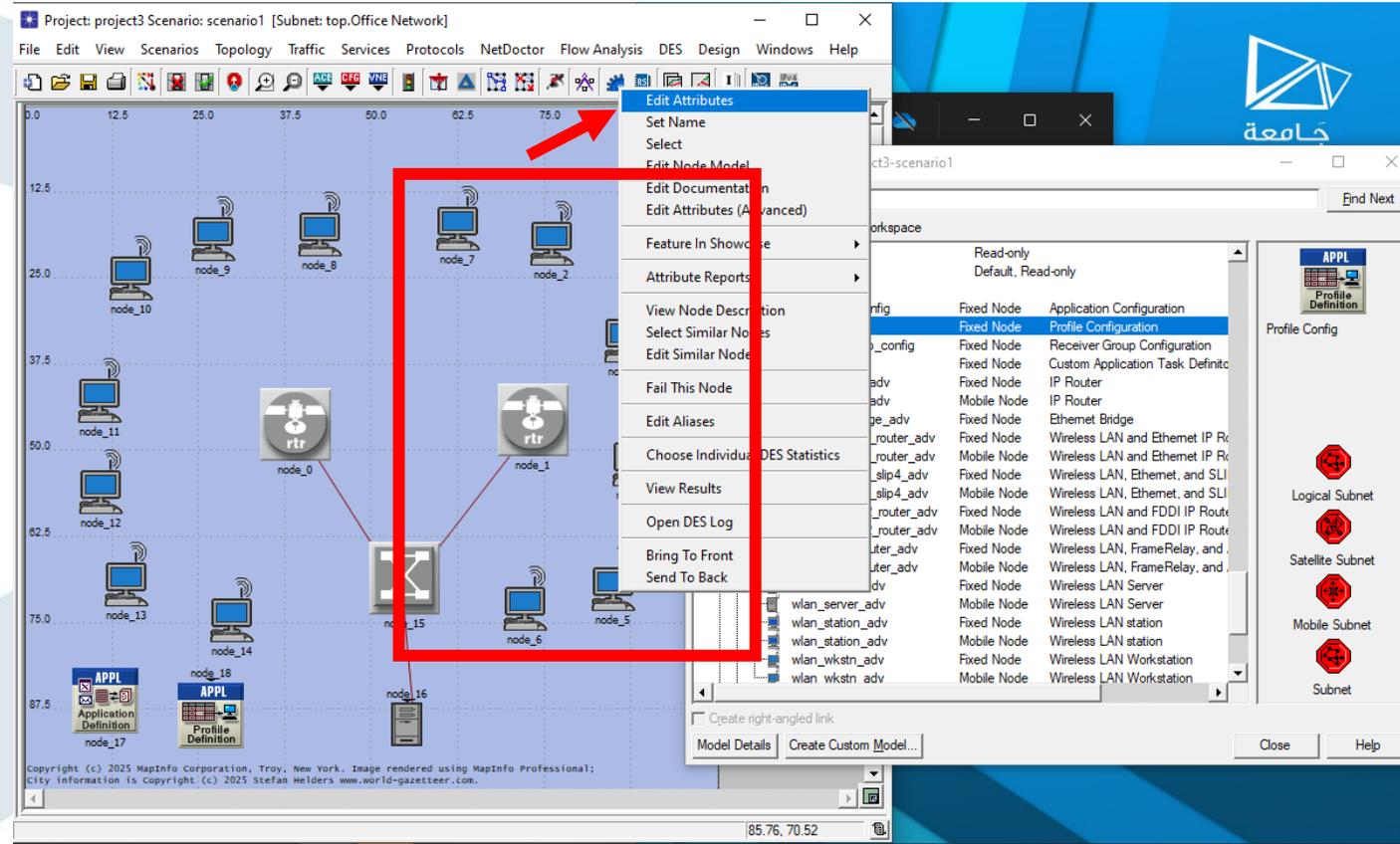
Exact match

Filter

OK Cancel

علينا تعريف BSS معين
لنقطة الوصول حتى
نعرف الأجهزة
الموصولة على هذا
الراوتر بقيمة المعرف
وهنا نعرفه 2





The screenshot shows the NetDoctor software interface. The main window displays a network topology with various nodes (routers, laptops, servers) and connections. A red box highlights a router node (node_1) and its context menu. The context menu is open, and the 'Edit Attributes' option is selected, indicated by a red arrow. The 'Edit Attributes' dialog box is also visible, showing a list of attributes for the selected node. The dialog box has a 'Profile Configuration' tab selected, and the 'BSS=1' attribute is highlighted in the list.

نقوم بإعطاء
الطرفيات الموصولة
على الراوتر قيمة
BSS=1

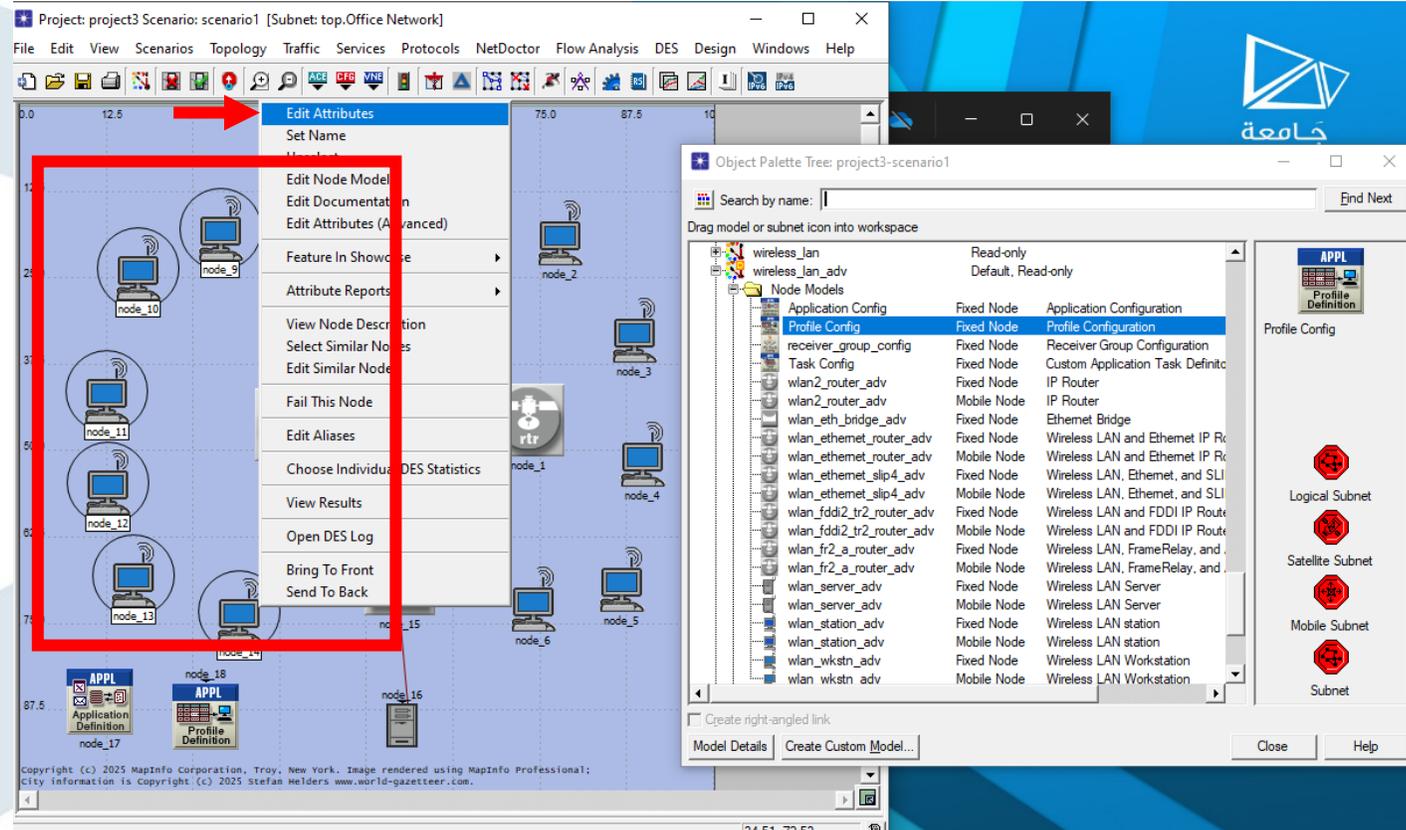


The screenshot displays a network simulation environment. The main window shows a network topology with various nodes (laptops, servers, and routers) connected. A configuration window titled "(node_4) Attributes" is open, showing a list of attributes and their values. The "BSS Identifier" attribute is highlighted, and its value is set to "1". A red arrow points to this attribute. Below the list, there are checkboxes for "Exact match" and "Apply to selected objects", with the latter being checked. Another red arrow points to the "Apply to selected objects" checkbox. The background shows a network diagram with nodes labeled node_0 through node_18, including two routers (node_0 and node_1) and several laptops (node_2 through node_18). The interface includes a menu bar (File, Edit, View, Scenarios, Topology, Traffic, Services, Protocols, NetDoctor, Flow Analysis, DES, Design, Windows, Help) and a toolbar with various icons. The status bar at the bottom shows the coordinates "93.63, 36.01".

| Attribute | Value |
|-------------------------------------|-----------------|
| Wireless LAN MAC Address | Auto Assigned |
| Wireless LAN Parameters | (...) |
| BSS Identifier | 1 |
| Access Point Functionality | Disabled |
| Physical Characteristics | Direct Sequence |
| Data Rate (bps) | 11 Mbps |
| Channel Settings | Auto Assigned |
| Transmit Power (W) | 0.005 |
| Packet Reception-Power Threshold... | -95 |
| Rts Threshold (bytes) | None |
| Fragmentation Threshold (bytes) | None |
| CTS-to-self Option | Enabled |
| Short Retry Limit | 7 |
| Long Retry Limit | 4 |
| AP Beacon Interval (secs) | 0.02 |
| Max Receive Lifetime (secs) | 0.5 |
| Buffer Size (bits) | 256000 |
| Roaming Capability | Disabled |
| Large Packet Processing | Drop |
| PCF Parameters | Disabled |
| HCF Parameters | Not Supported |

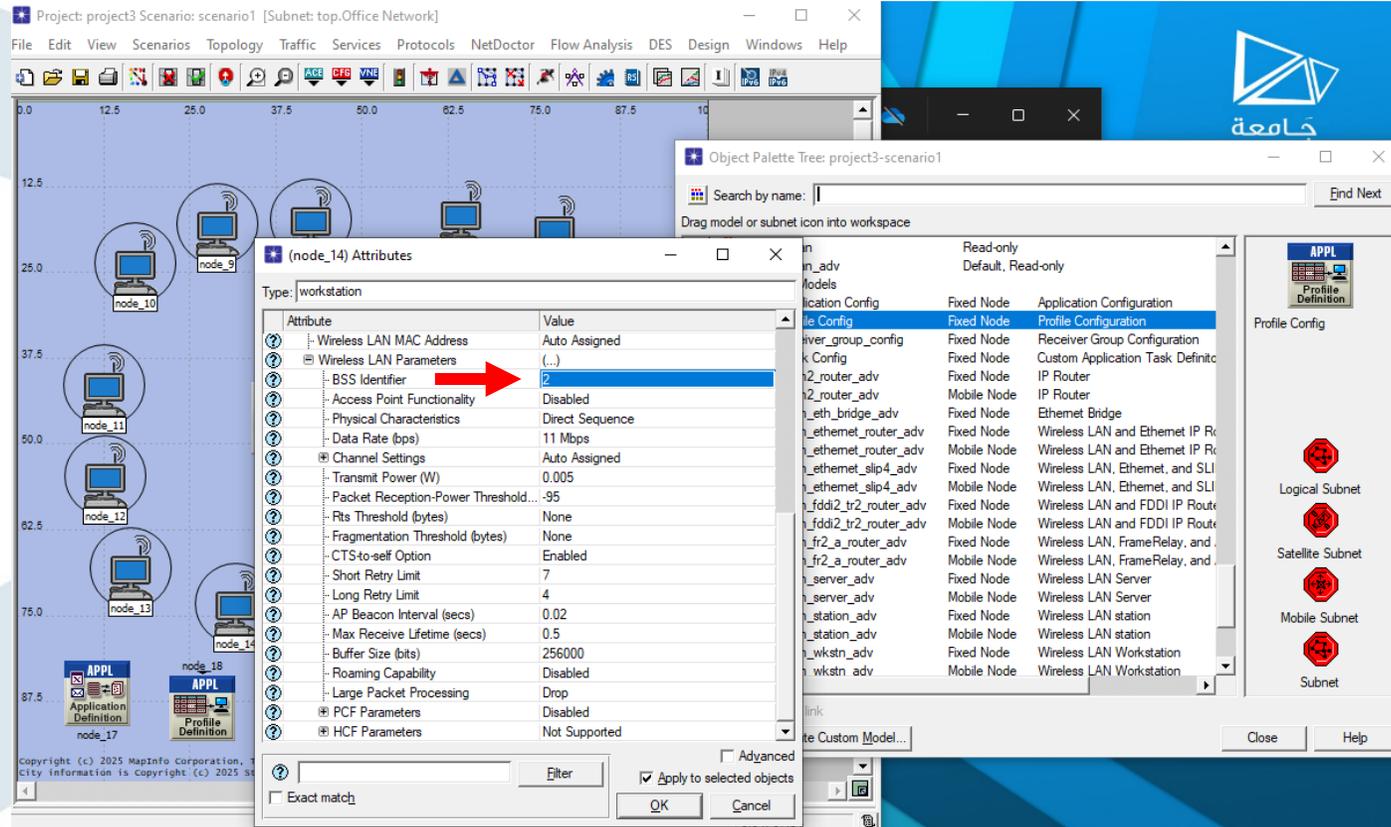
نقوم بإعطاء الطرفيات
الموصولة على
الراوتر 1 قيمة BSS=1
مع اختيار كافة
التطبيقات لاختصار
عملية التطبيق ثم نحدد
خيار apply to
selected objects





نقوم بإعطاء الطرفيات
الموصولة على الراوتر
2 قيمة BSS=2 مع
اختيار كافة التطبيقات
لاختصار عملية التطبيق
ثم نحدد خيار
selected objects





نقوم بإعطاء الطرفيات
الموصولة على الراوتر
2 قيمة BSS=2 مع
اختيار كافة التطبيقات
لاختصار عملية التطبيق
ثم نحدد خيار
selected objects

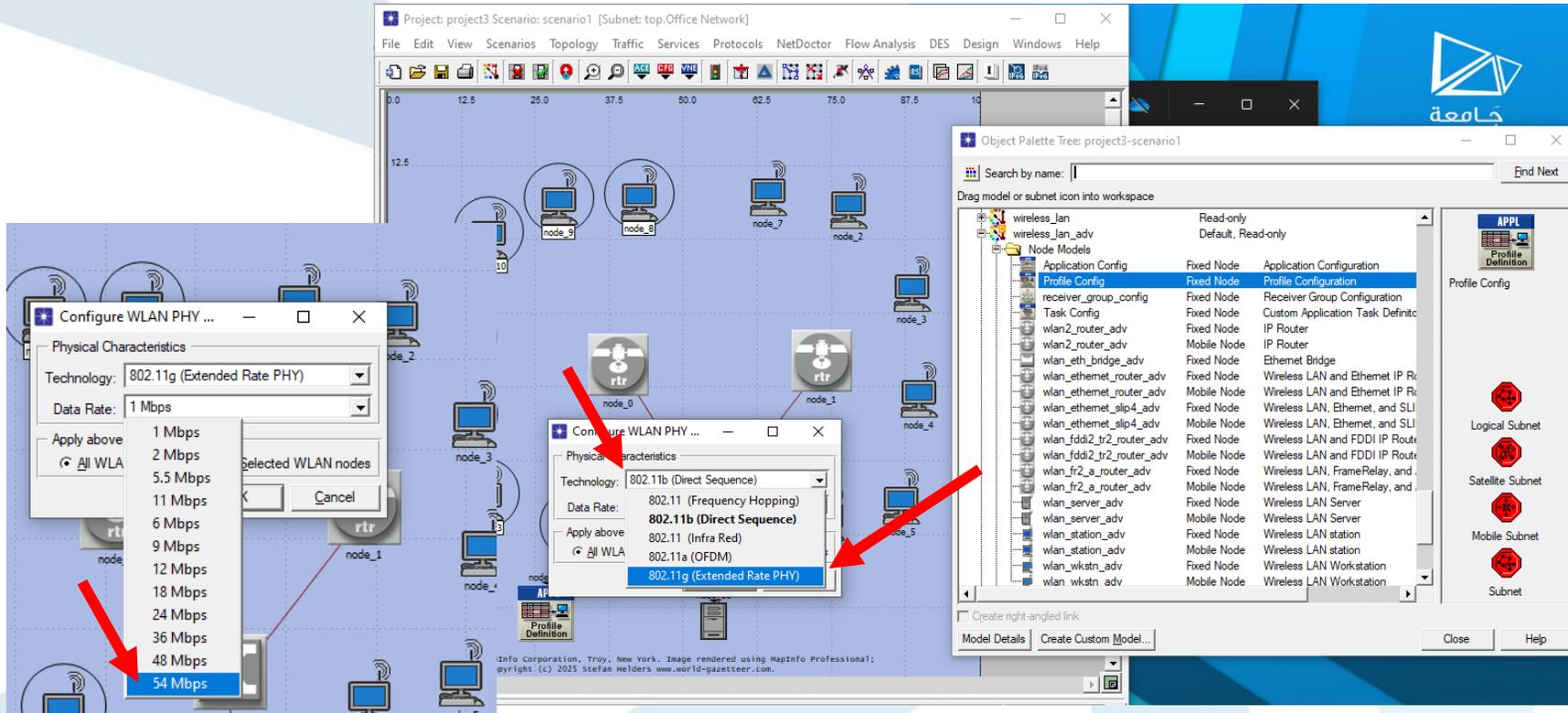


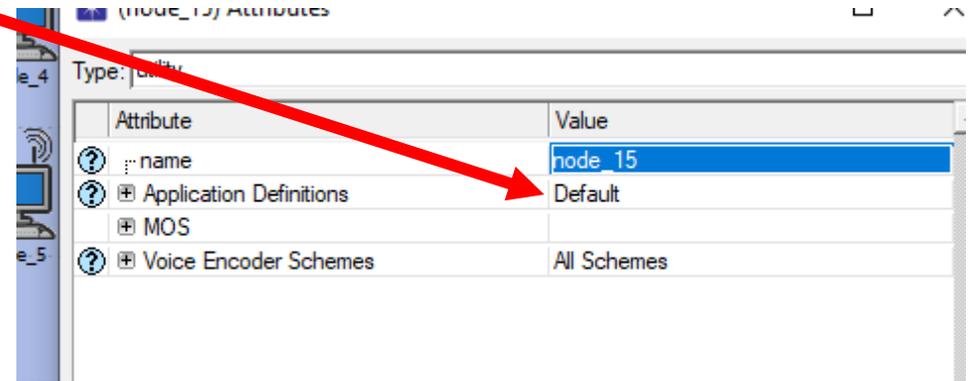
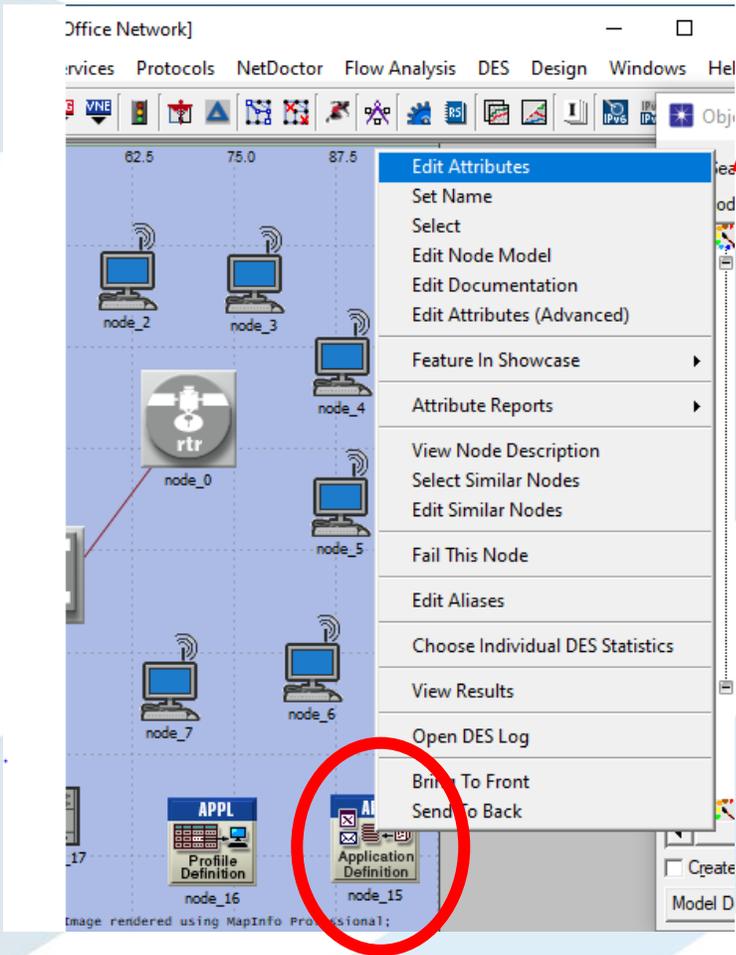
نختار wireless

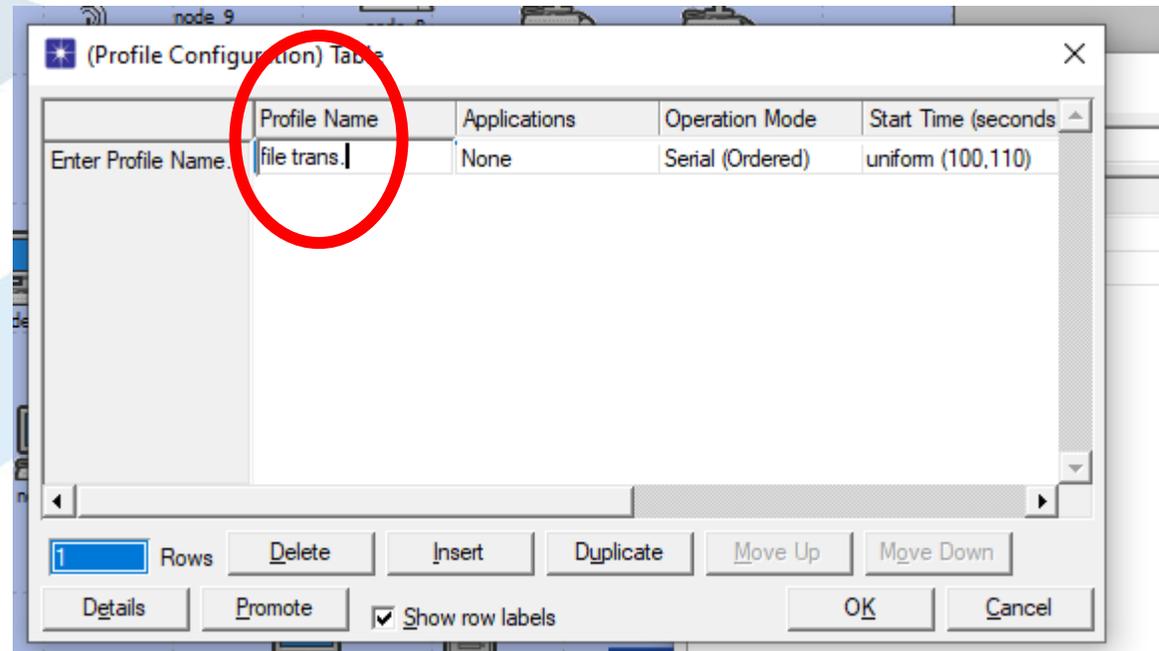
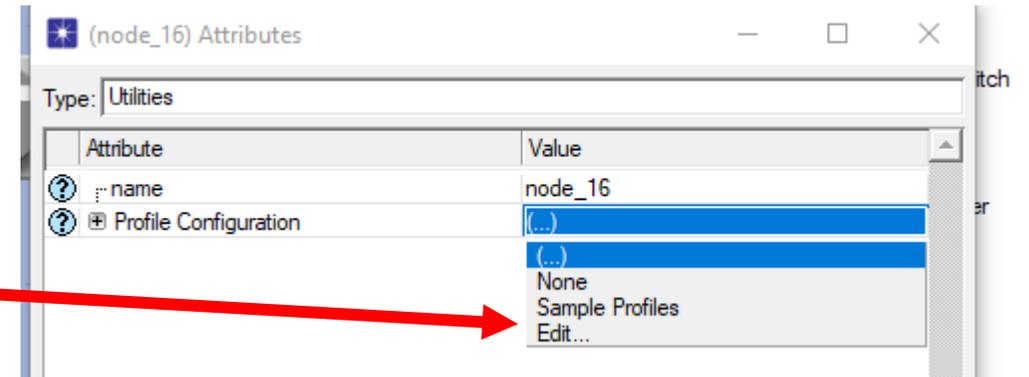
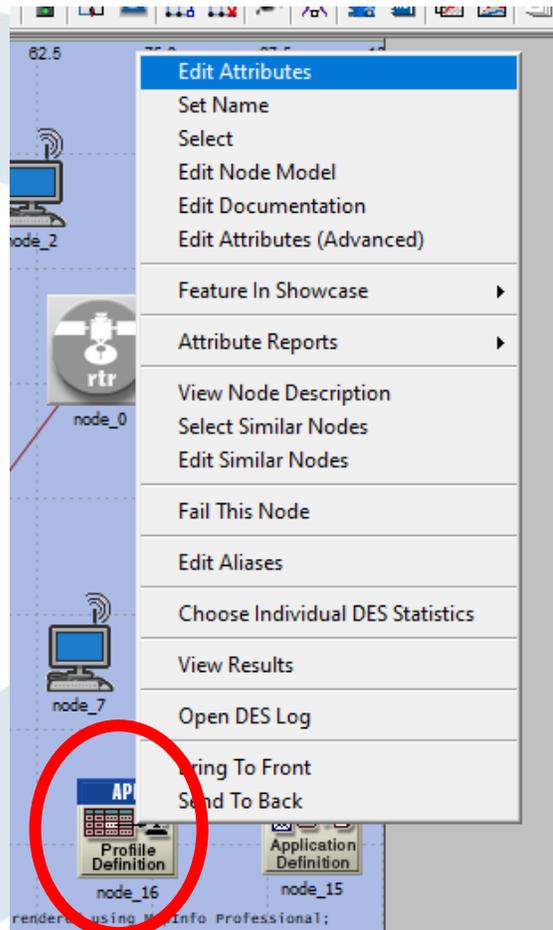
802.11g

و سرعة 54

Mbps







(Profile Configuration) Table

| Profile Name | Applications | Operation Mode | Start Time (seconds) |
|--------------|--------------|------------------|----------------------|
| file trans. | (...) | Serial (Ordered) | uniform (100,110) |

(Applications) Table

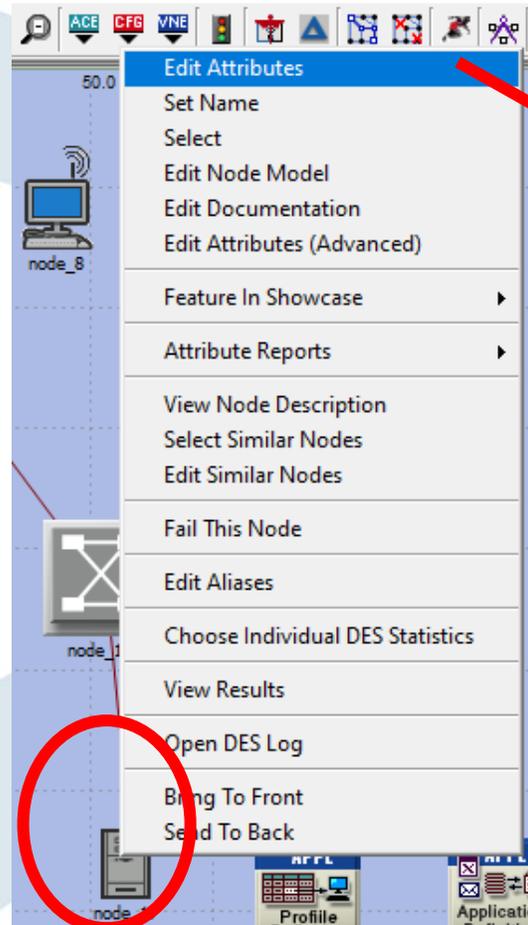
| Name | Start Time Offset (seconds) | Duration (seconds) | Repeatability |
|-----------------------|-----------------------------|--------------------|---------------|
| File Transfer (Heavy) | uniform (5,10) | End of Profile | Unlimited |

File Transfer (Heavy) | Database Access (Heavy) | Database Access (Light) | Email (Heavy) | Email (Light) | File Transfer (Heavy) | File Transfer (Light) | File Print (Heavy) | File Print (Light) | Telnet Session (Heavy) | Telnet Session (Light) | Video Conferencing (Heavy) | Video Conferencing (Light) | Voice over IP Call (PCM Quality) | Voice over IP Call (GSM Quality) | Web Browsing (Heavy HTTP1.1) | Web Browsing (Light HTTP1.1)

1 | Insert | Duplicate | Move Up | Move Down | OK | Cancel

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50.0

node_8

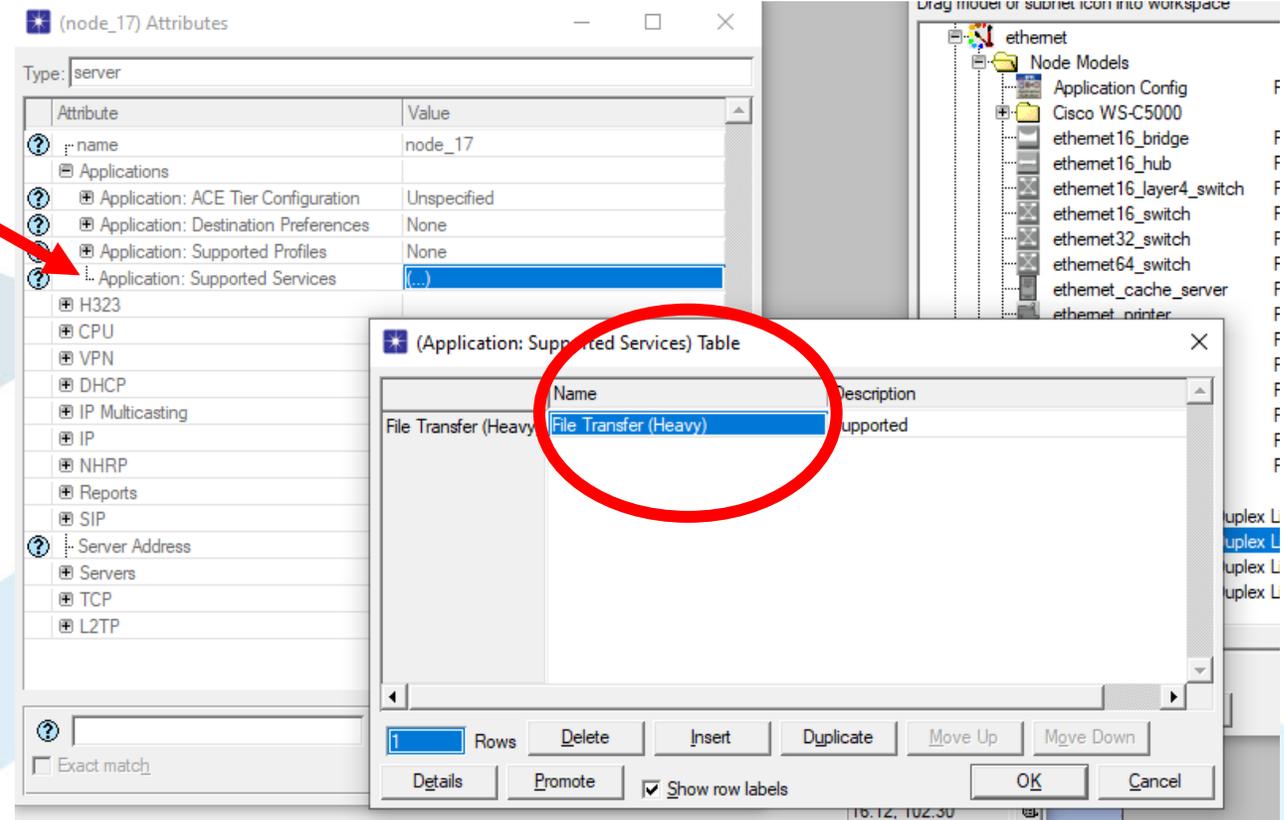
- Edit Attributes
- Set Name
- Select
- Edit Node Model
- Edit Documentation
- Edit Attributes (Advanced)
- Feature In Showcase
- Attribute Reports
- View Node Description
- Select Similar Nodes
- Edit Similar Nodes
- Fail This Node
- Edit Aliases
- Choose Individual DES Statistics
- View Results
- Open DES Log
- Bring To Front
- Send To Back

node_1

node_2

Profile

Application



(node_17) Attributes

Type: server

| Attribute | Value |
|--------------------------------------|-------------|
| name | node_17 |
| Applications | |
| Application: ACE Tier Configuration | Unspecified |
| Application: Destination Preferences | None |
| Application: Supported Profiles | None |
| Application: Supported Services | (...) |
| H323 | |
| CPU | |
| VPN | |
| DHCP | |
| IP Multicasting | |
| IP | |
| NHRP | |
| Reports | |
| SIP | |
| Server Address | |
| Servers | |
| TCP | |
| L2TP | |

(Application: Supported Services) Table

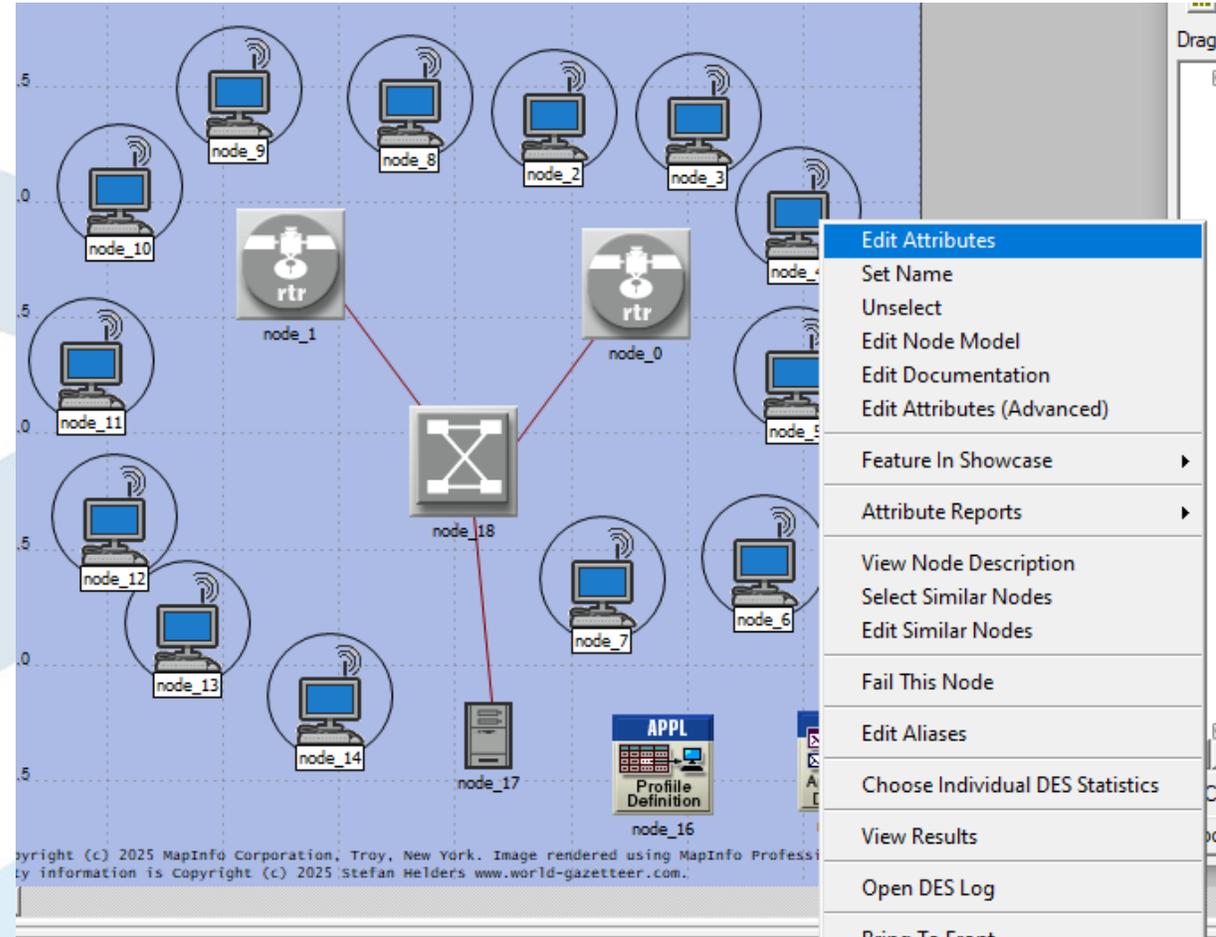
| Name | Description |
|-----------------------|-------------|
| File Transfer (Heavy) | Supported |

1 Rows Delete Insert Duplicate Move Up Move Down

Details Promote Show row labels OK Cancel



نختار جميع الأجهزة
الطرفية ونحدد
تحرير الخصائص
لتعريفها على
البروفایل الجديد



نقوم بالتعديل على الـ

Supported

Profiles

بحيث نختار البروفايل

الذي قمنا بتعريفه

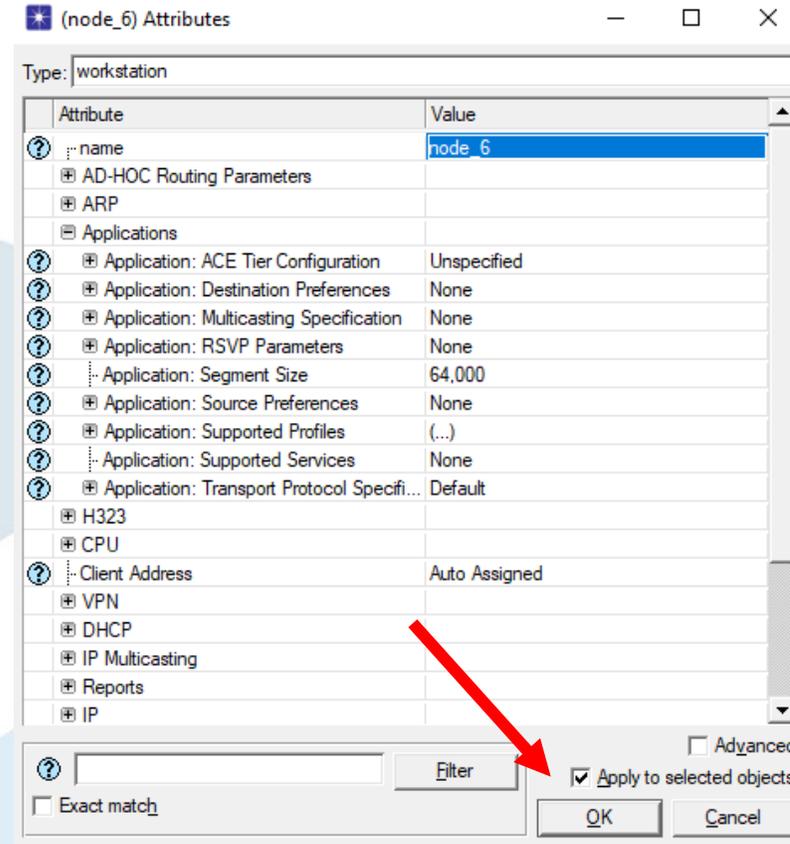
سابقا

The screenshot shows a network simulation environment with several nodes (node_1 to node_10) and two routers (rtr). A configuration window for a workstation profile is open, displaying a table of supported profiles. A red arrow points to the 'file trans.' profile in the table. Another red arrow points to the 'Application: Supported Profiles' entry in the configuration window's application list.

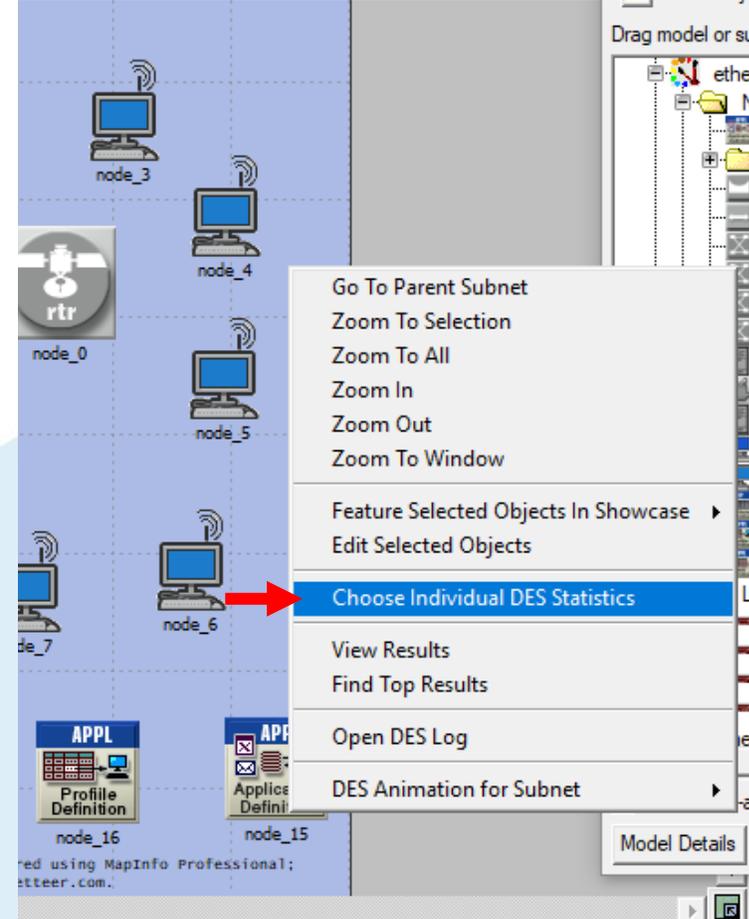
| Profile Name | Traffic Type | Application Delay Tracking |
|--------------|--------------|----------------------------|
| file trans. | All Discrete | Disabled |



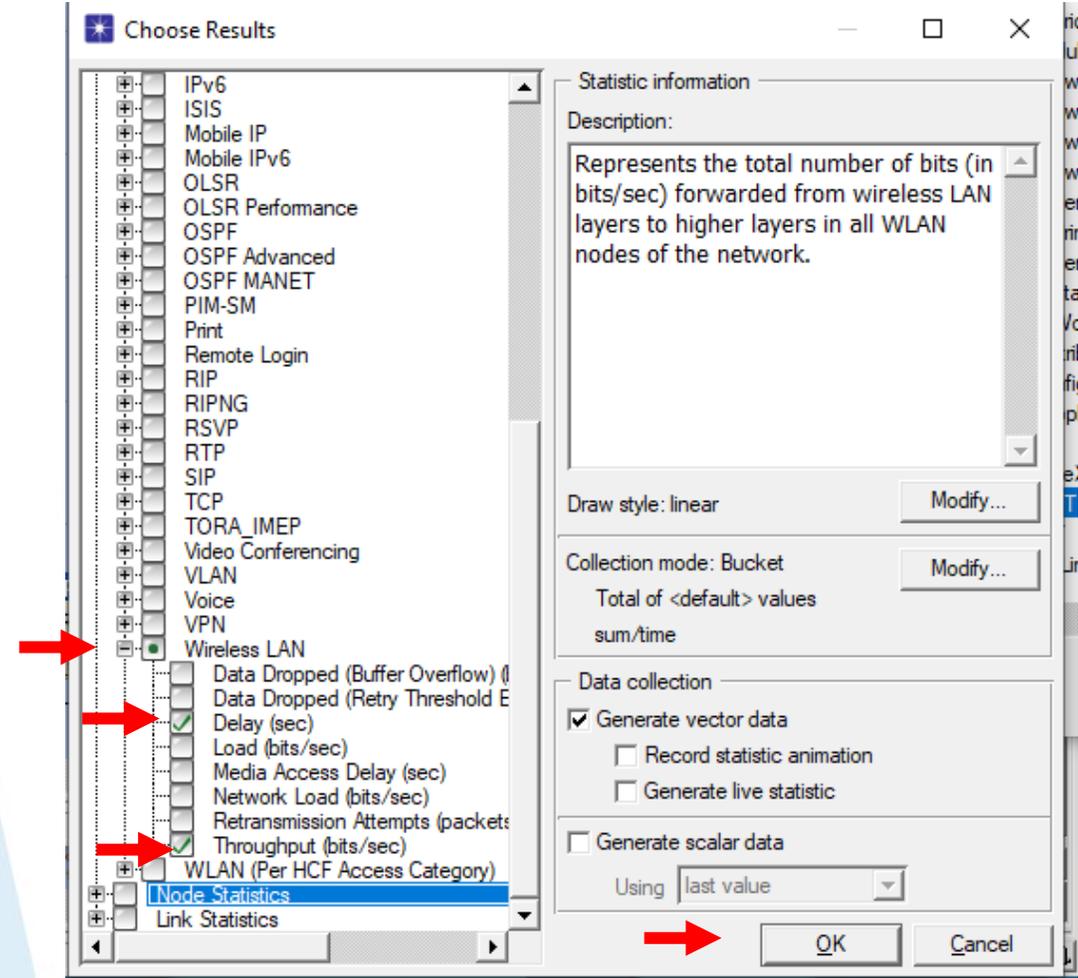
نطبقه على كافة
الطرفيات



لتحليل أداء الشبكة ننقر بزر الفأرة
اليميني على أي مكان ضمن سطح
العمل الأزرق ونختار
Choose individual DES
Statistics

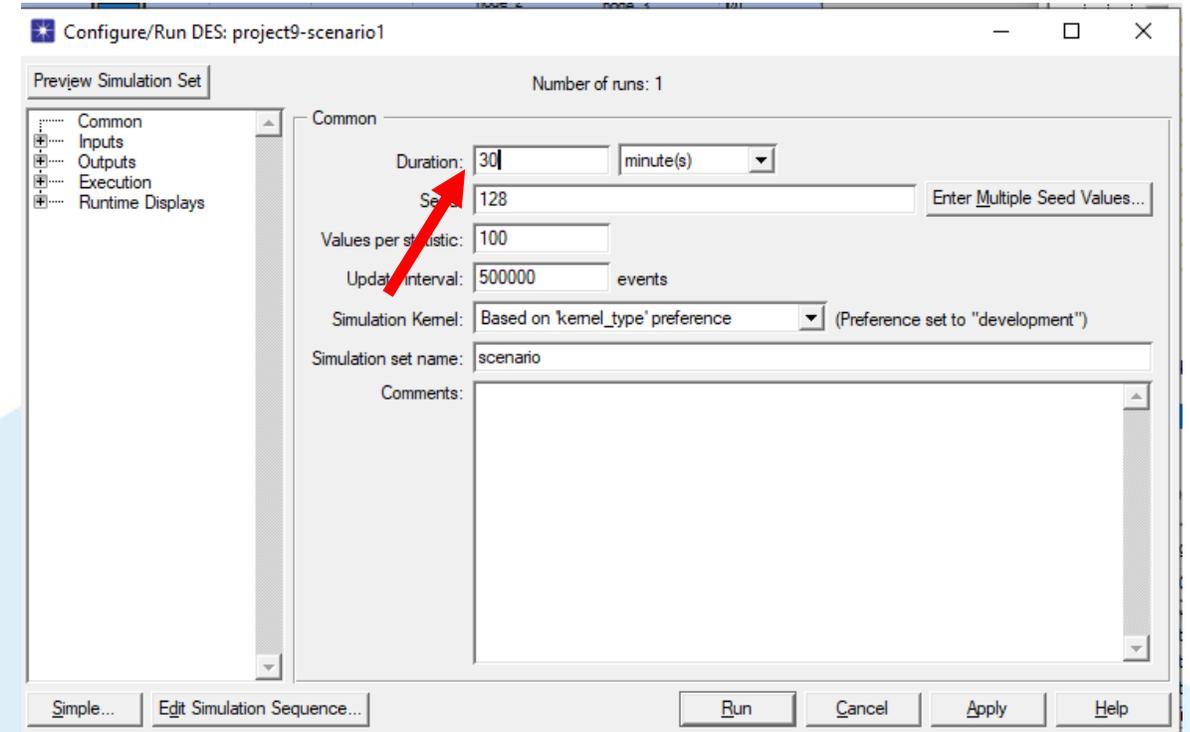
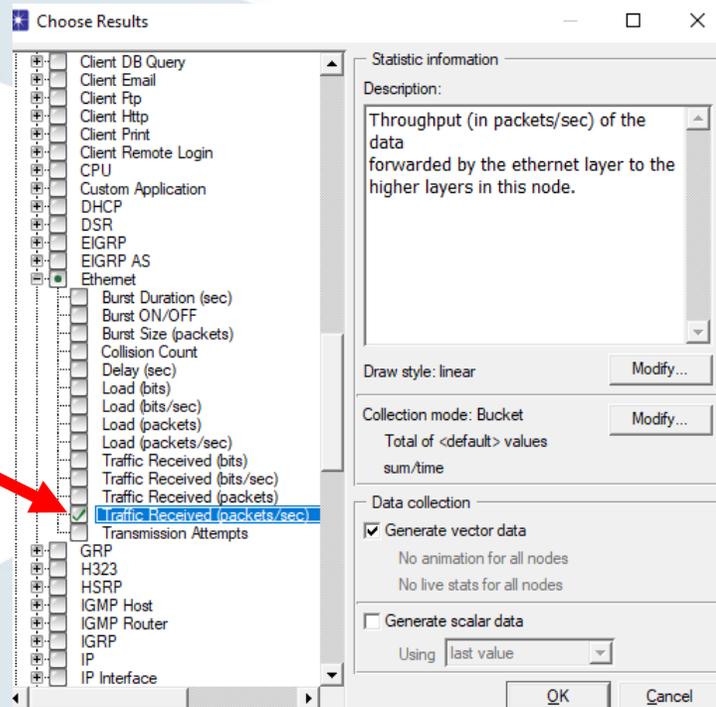
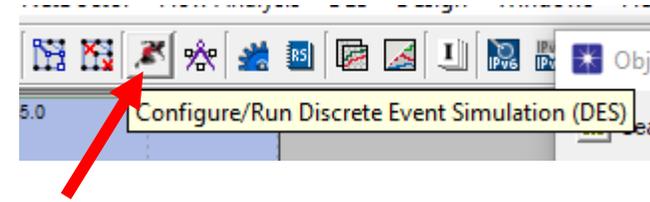


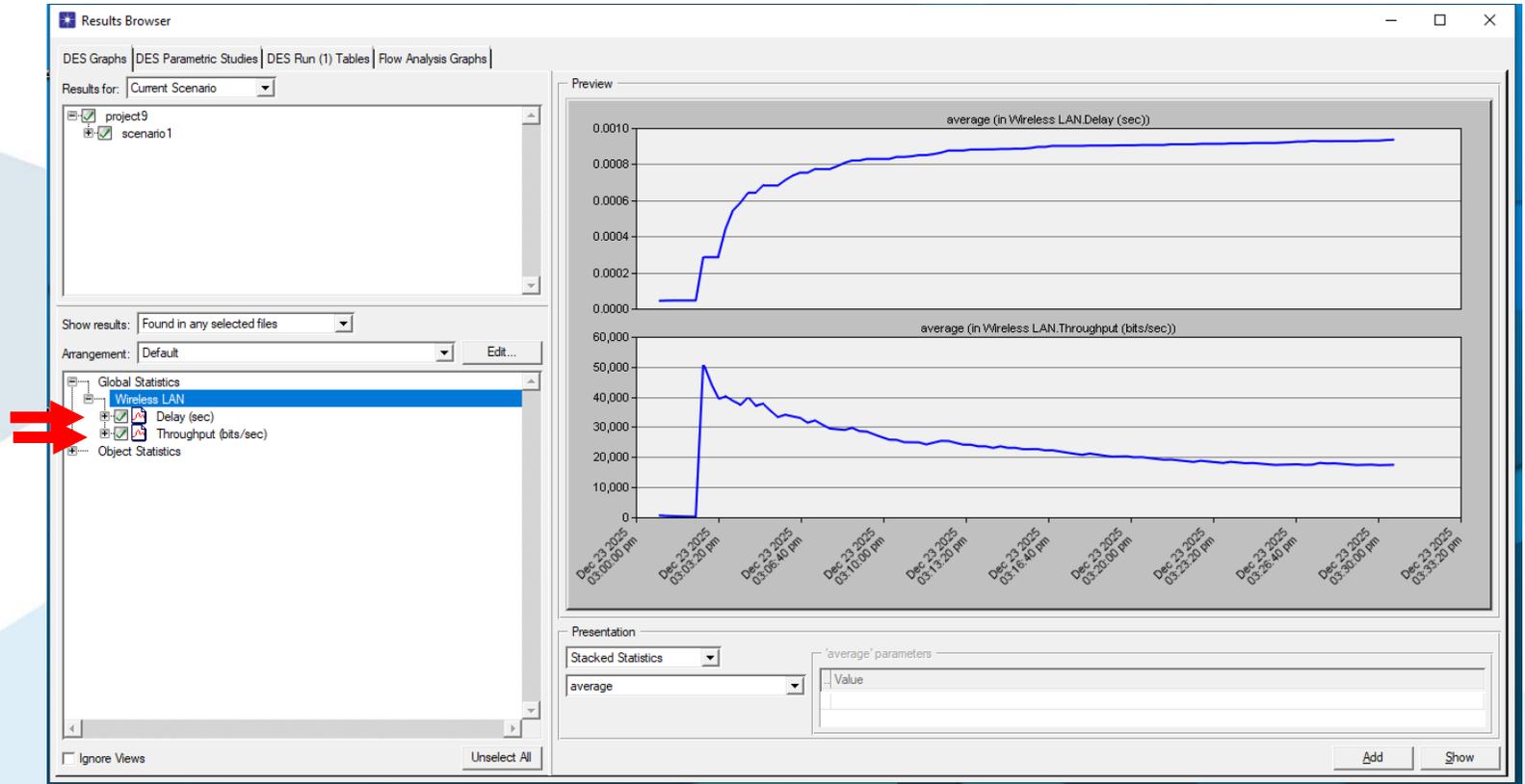
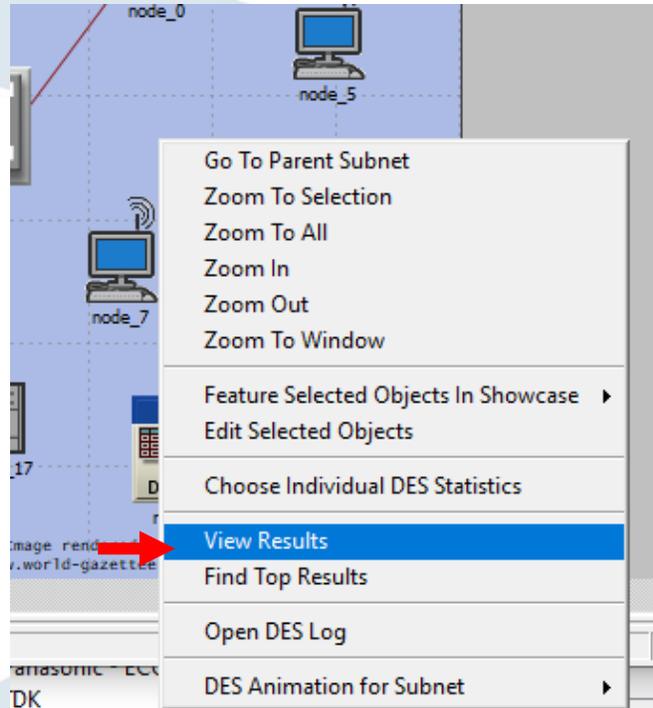
نتأكد من تطبيق
كافة التعديلات على
كل أجهزة الشبكة

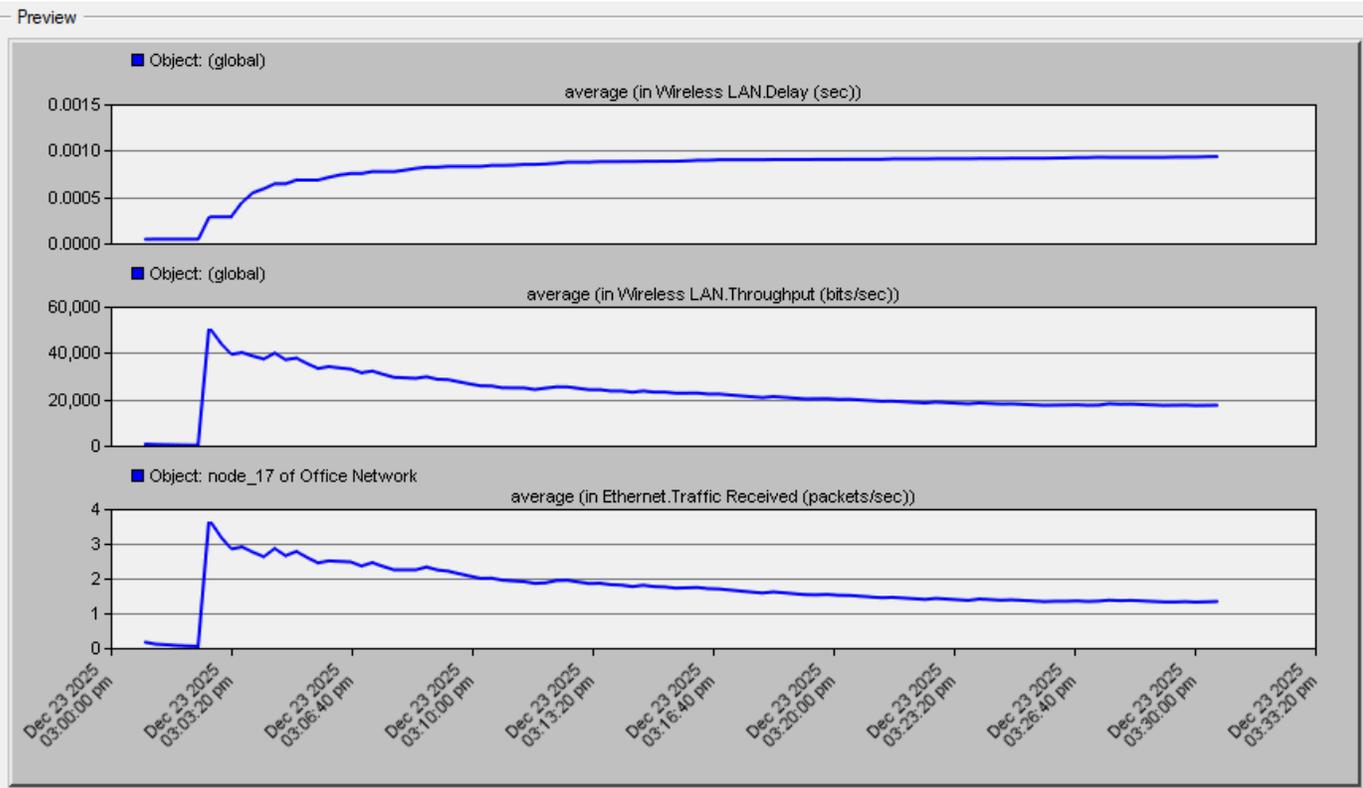
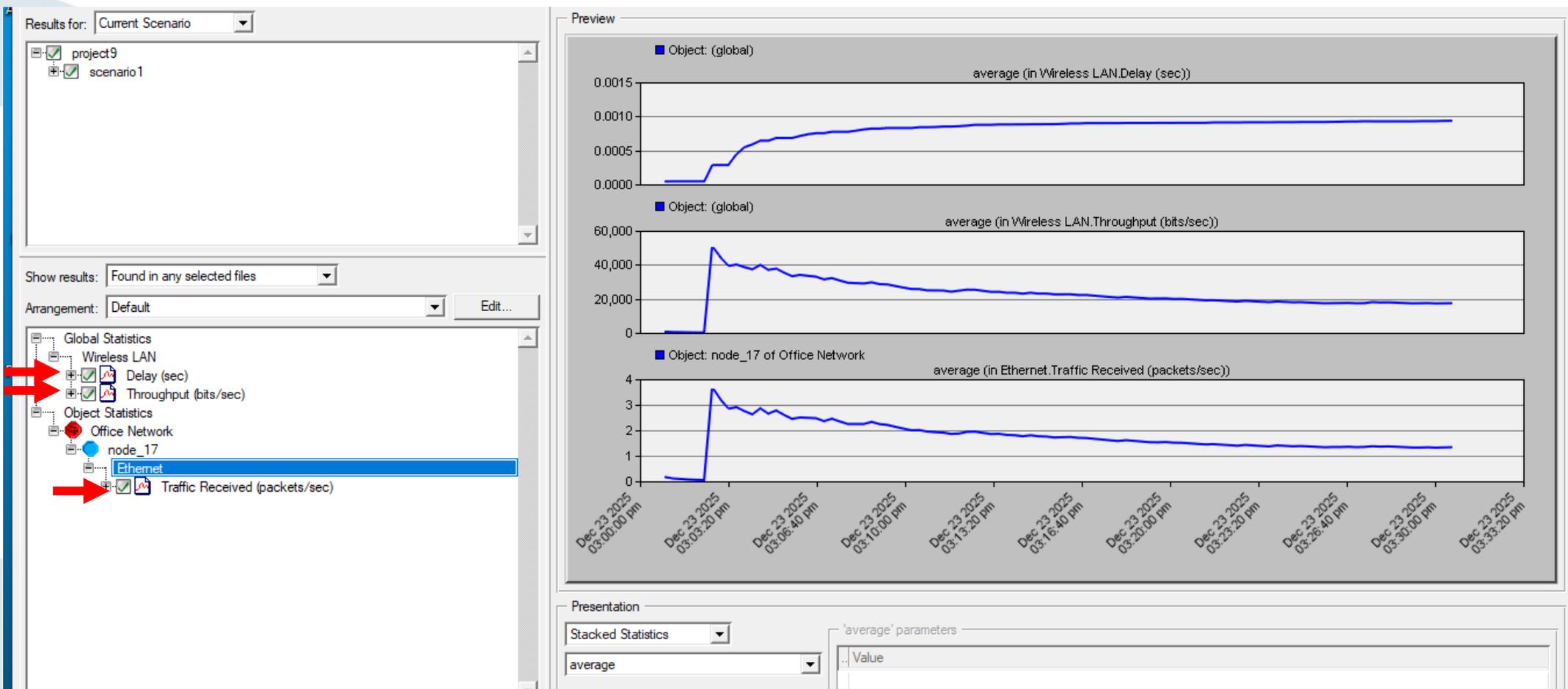




خيارات إضافية للتحليل







Presentation

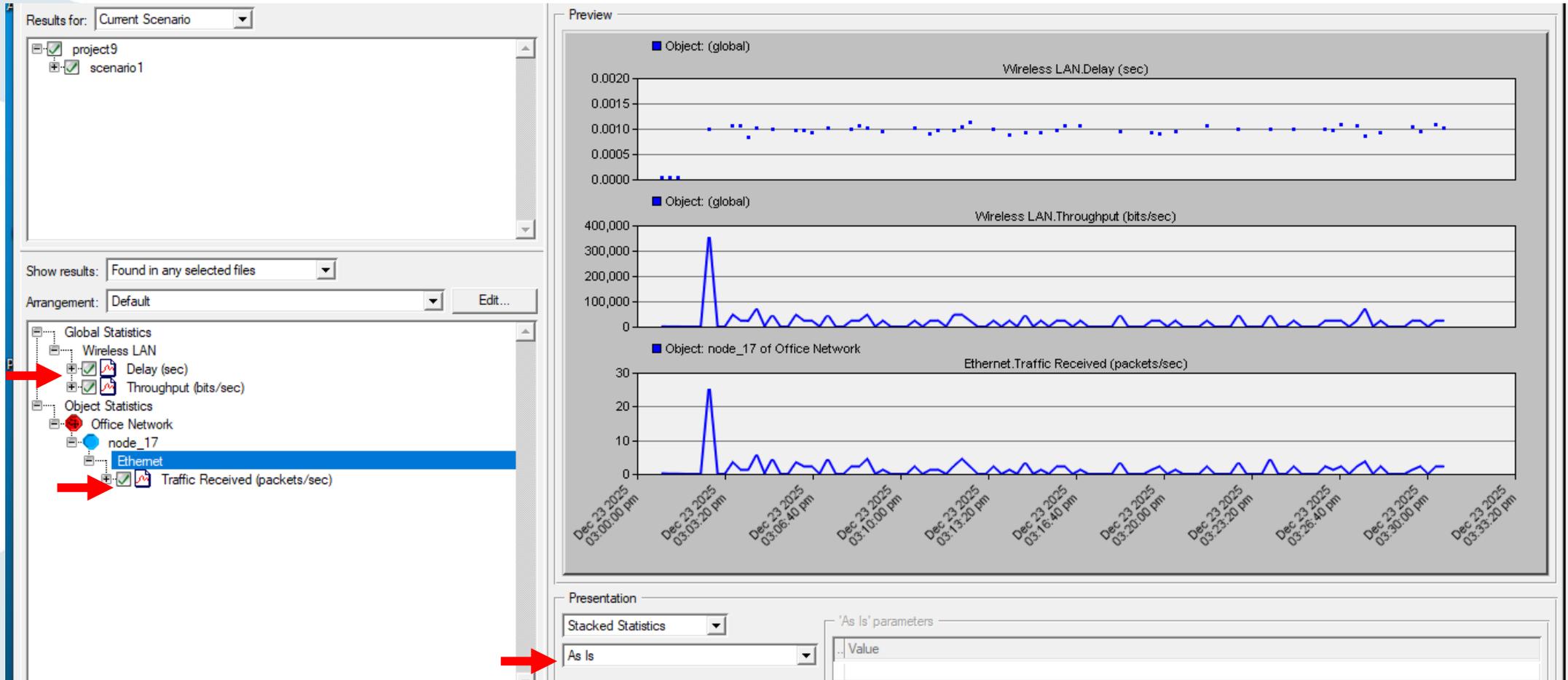
Stacked Statistics

average

'average' parameters

Value





Thanks for Listening

