Find Your Voice in the cloud

# Time Sensitive Information!

## These Configuration Changes Must Be Applied Ten Days Prior to Absolute VOICE Cut-Over

# Watchguard Router Configuration
# For Absolute VOICE Cloud Telephony Deployment

Document Version 2.1

March 17th, 2017

# Table of Contents

# *Read Me!*

1. These changes must be applied before client implements their Absolute VOICE hosted telephony solution.
2. If you are experienced with business class firewalls and routers, please have your IT staff/contractor perform these changes for you.
3. Please read this entire document before attempting to make any changes.
4. If you have questions about this document, you can call 800-955-6703 to schedule an appointment with one of our firewall support specialists. We will attempt schedule your appointment within 24- 48 hours of your call to us so please allow adequate time.
5. After changes are completed please let your client or Absolute VOICE Customer Support specialist know.
6. Once completed, an Absolute VOICE technician will be requesting access or a collaborative web session to verify settings prior to customer cut over.

# Introduction

This document is for IT administrators and illustrates configuration changes required on Watchguard firewall & router appliances to support Absolute VOICE's cloud communications telecommunications platform.  This document assumes a basic network deployment consisting of one internal LAN network containing the IP phones and one WAN network connected to the Internet. While we strongly recommend a dedicated network for VoIP traffic, the instructions below can be used for a “converged” network whereby both VoIP and non-VoIP traffic share one physical WAN network. With basic modifications (such as adding access rules for additional interfaces); this configuration can be extrapolated for other network layouts.  The screenshots below may vary slightly from what is displayed while configuring the device depending on model and OS software version. Setting values not mentioned may be left at default or changed as required for specific purposes.

**Please call Absolute VOICE Customer Support at 800-955-6703 if you need any further information. Firewall changes can be in depth and you will need to schedule time with one of our specialists if you need assistance.**

Screenshots and instructions are based on XTM25 running version 11.8.B432340.

We recommend loading the latest XTM OS  (firmware).

# Firewall Checklist

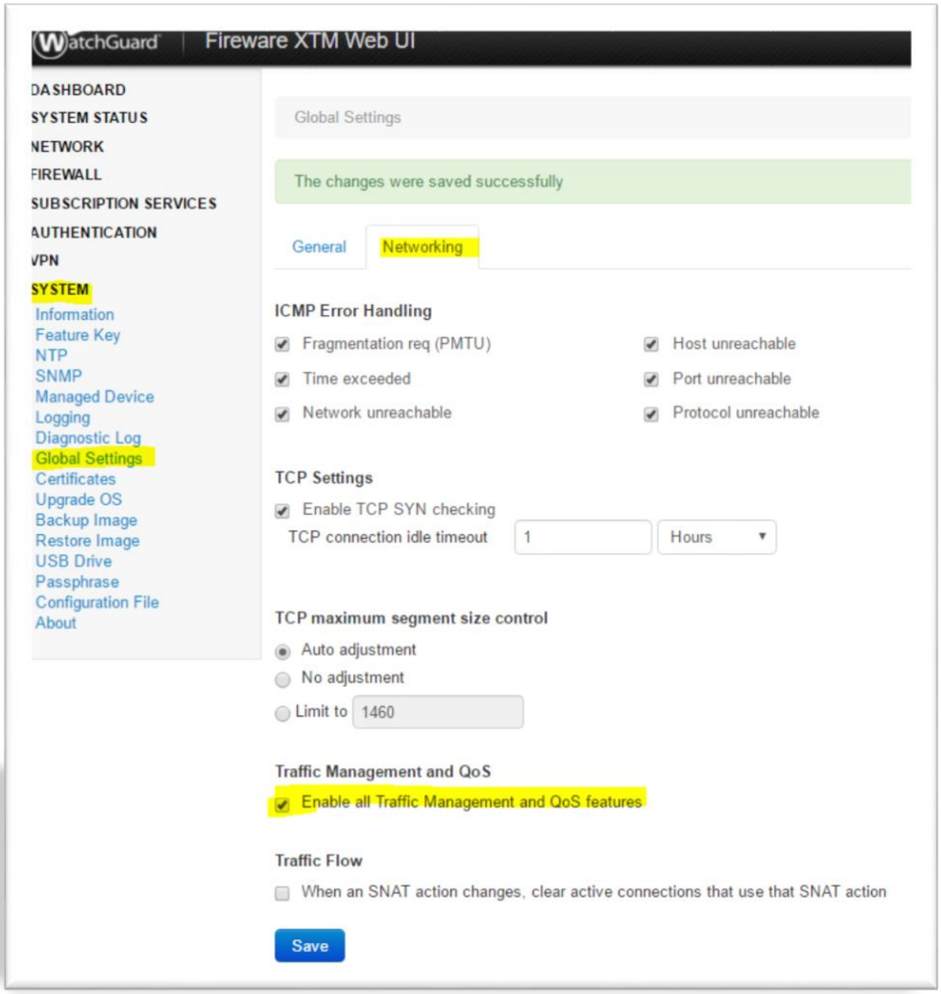
*After applying* the GUI configurations in this document, please take the appropriate screen shots to provide the firewall “verification” to Absolute VOICE.

| Screen Shot #: | Configuration: | Completed: |
|---|---|---|
| 1 | System → Global Settings → Networking Tab (Traffic Management) | |
| 2 | Network → Interfaces → External → Advanced Tab (Prioritize based on QoS Marking) | |
| 3 | Firewall → Traffic Management → Absolute VOICE Traffic | |
| 4 | Firewall → Firewall Policies (overview screen) | |
| 5 | Firewall → Firewall Policies → Abs Inbound Policy → Settings Tab | |
| 6 | Firewall → Firewall Policies → Abs Inbound Policy → Traffic Management Tab | |
| 7 | Firewall → Firewall Policies → Abs Inbound Policy → Advanced Tab | |
| 8 | Firewall → Firewall Policies → Abs Outbound Policy → Settings Tab | |
| 9 | Firewall → Firewall Policies → Abs Outbound Policy → Traffic Management Tab | |
| 10 | Firewall → Firewall Policies → Abs Outbound Policy → Advanced Tab | |
| 11 | Firewall → Blocked Sites → Blocked Sites Exceptions Tab | |

# Enable Traffic Management & QoS

Note: default log in to Watchgaurd devices is: https://xxx.xxx.xxx.1:8080
UN: admin
PW: readwrite

## System → Global Settings → Networking tab



WatchGuard | Fireware XTM Web UI

DASHBOARD
SYSTEM STATUS
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AUTHENTICATION
VPN
SYSTEM
- Information
- Feature Key
- NTP
- SNMP
- Managed Device
- Logging
- Diagnostic Log
- Global Settings
- Certificates
- Upgrade OS
- Backup Image
- Restore Image
- USB Drive
- Passphrase
- Configuration File
- About

Global Settings

The changes were saved successfully

General | Networking

ICMP Error Handling

☑ Fragmentation req (PMTU) ☑ Host unreachable
☑ Time exceeded ☑ Port unreachable
☑ Network unreachable ☑ Protocol unreachable

TCP Settings

☑ Enable TCP SYN checking
TCP connection idle timeout: 1 Hours ▾

TCP maximum segment size control

● Auto adjustment
○ No adjustment
○ Limit to 1460

Traffic Management and QoS

☑ Enable all Traffic Management and QoS features

Traffic Flow

☐ When an SNAT action changes, clear active connections that use that SNAT action

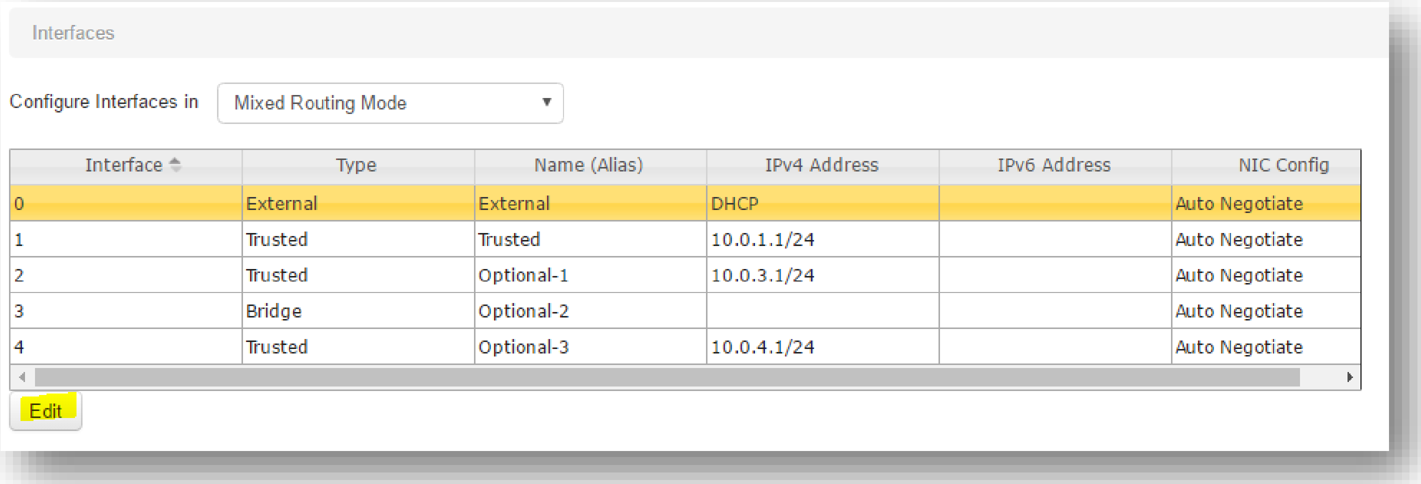
Save

- Click (check) the “Enable all Traffic Management and QoS features
- Click Save

# Enable QoS Marking on WAN and LAN Interfaces

## Network → Interfaces

- Select on the interface 0 (External/WAN)
  - This will also need to be configured on the X1 (or Active LAN port).
  - Please repeat on the LAN port
- Click "edit"

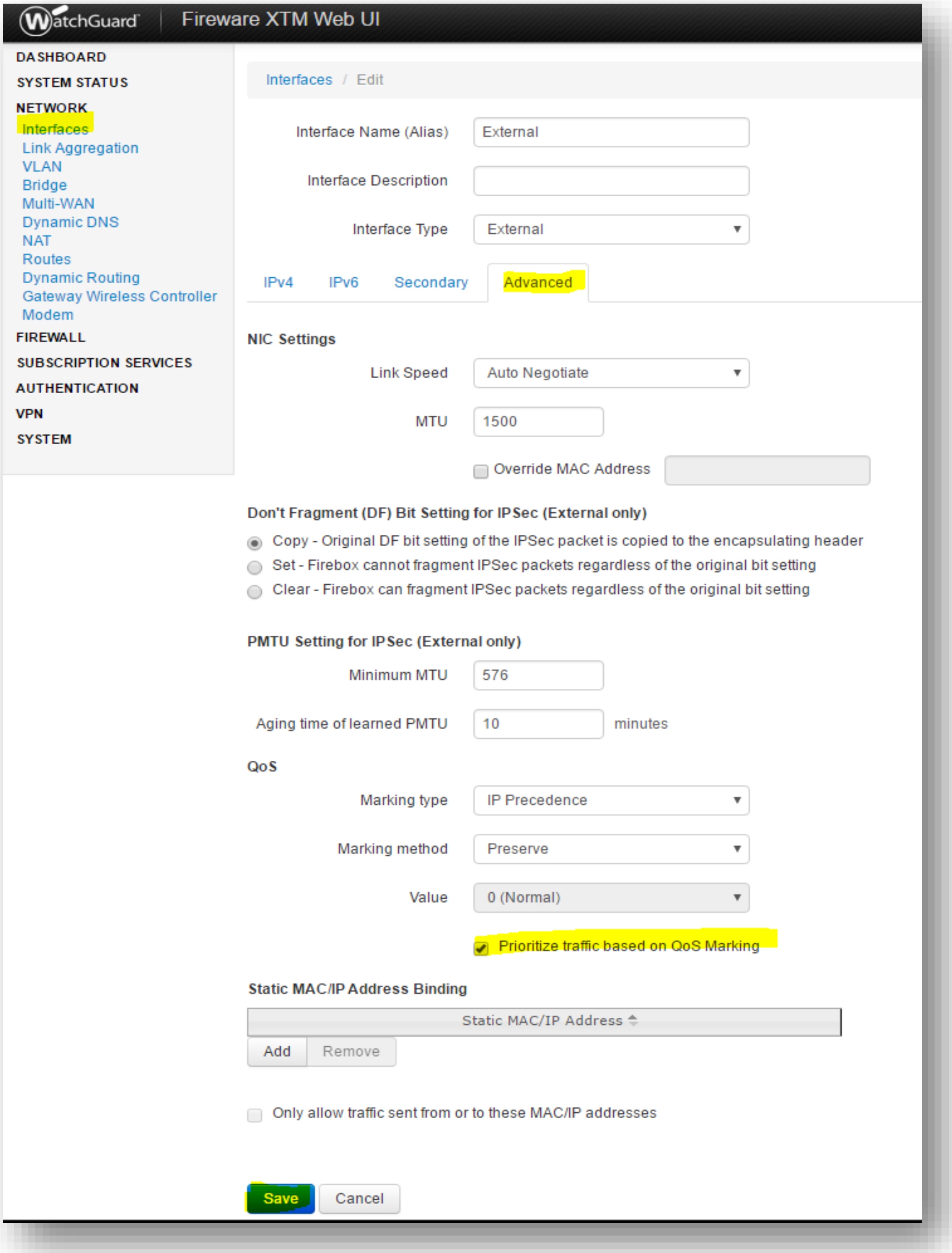


Interfaces

Configure Interfaces in: Mixed Routing Mode

| Interface | Type | Name (Alias) | IPv4 Address | IPv6 Address | NIC Config |
|---|---|---|---|---|---|
| 0 | External | External | DHCP | | Auto Negotiate |
| 1 | Trusted | Trusted | 10.0.1.1/24 | | Auto Negotiate |
| 2 | Trusted | Optional-1 | 10.0.3.1/24 | | Auto Negotiate |
| 3 | Bridge | Optional-2 | | | Auto Negotiate |
| 4 | Trusted | Optional-3 | 10.0.4.1/24 | | Auto Negotiate |

- Click on the “Advanced” tab



Interface Name (Alias): External

Interface Description:

Interface Type: External

NIC Settings

Link Speed: Auto Negotiate

MTU: 1500

□ Override MAC Address

Don't Fragment (DF) Bit Setting for IPSec (External only)

● Copy - Original DF bit setting of the IPSec packet is copied to the encapsulating header
○ Set - Firebox cannot fragment IPSec packets regardless of the original bit setting
○ Clear - Firebox can fragment IPSec packets regardless of the original bit setting

PMTU Setting for IPSec (External only)

Minimum MTU: 576

Aging time of learned PMTU: 10 minutes

QoS

Marking type: IP Precedence

Marking method: Preserve

Value: 0 (Normal)

☑ Prioritize traffic based on QoS Marking

Static MAC/IP Address Binding

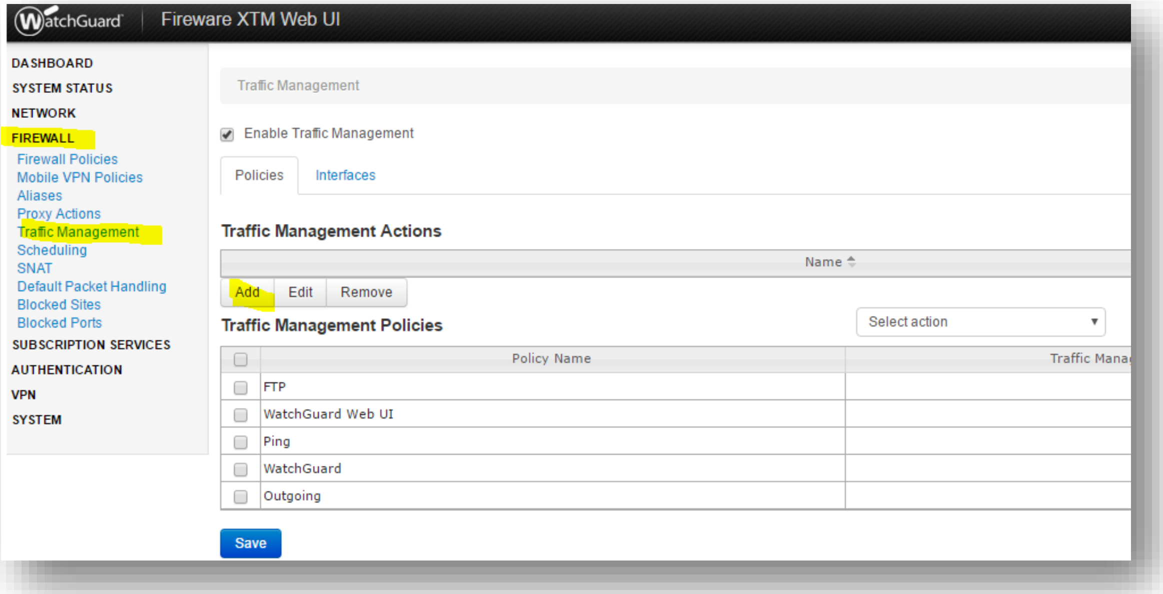
| Static MAC/IP Address |
|---|

□ Only allow traffic sent from or to these MAC/IP addresses

- Click “Prioritize traffic based on QoS Marking
- Click Save

# Traffic Management

## Firewall → Traffic Management



Traffic Management

☑ Enable Traffic Management

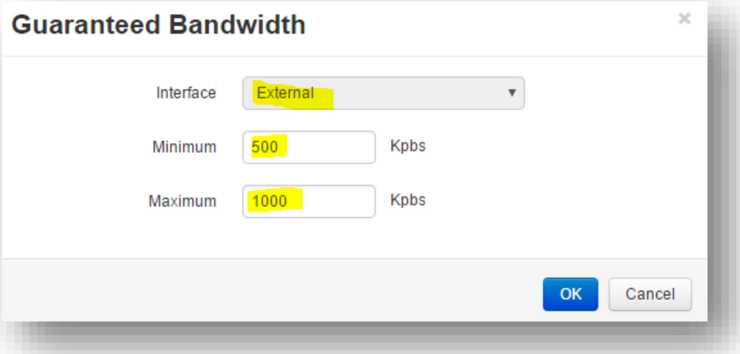
Traffic Management Actions

| Name |
|---|

Traffic Management Policies

| □ | Policy Name | Traffic Mana |
|---|---|---|
| □ | FTP | |
| □ | WatchGuard Web UI | |
| □ | Ping | |
| □ | WatchGuard | |
| □ | Outgoing | |

- Click the “Add” button
- Create a Absolute VOICE Traffic Management scope
  - Name: Absolute VOICE Traffic
    - Click the “Add” button under “Guaranteed Bandwidth for Outgoing traffic”



Guaranteed Bandwidth

Interface: External

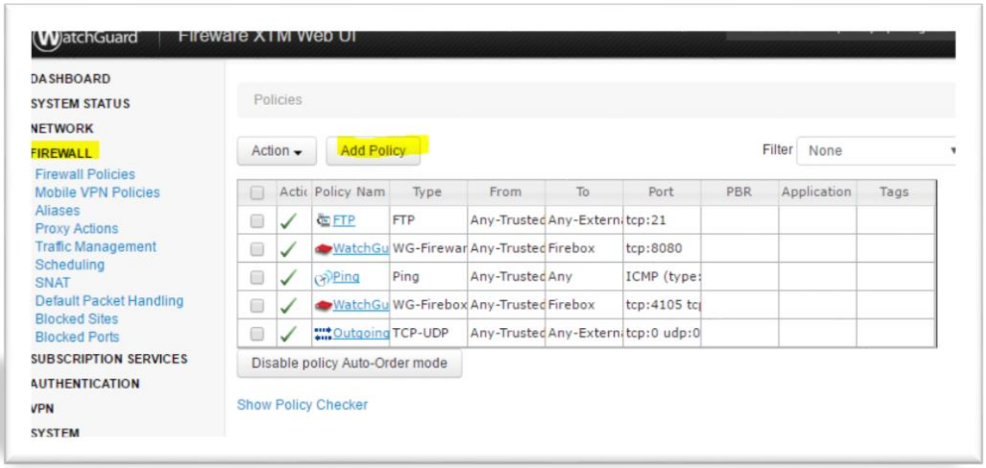
Minimum: 500 Kpbs

Maximum: 1000 Kpbs

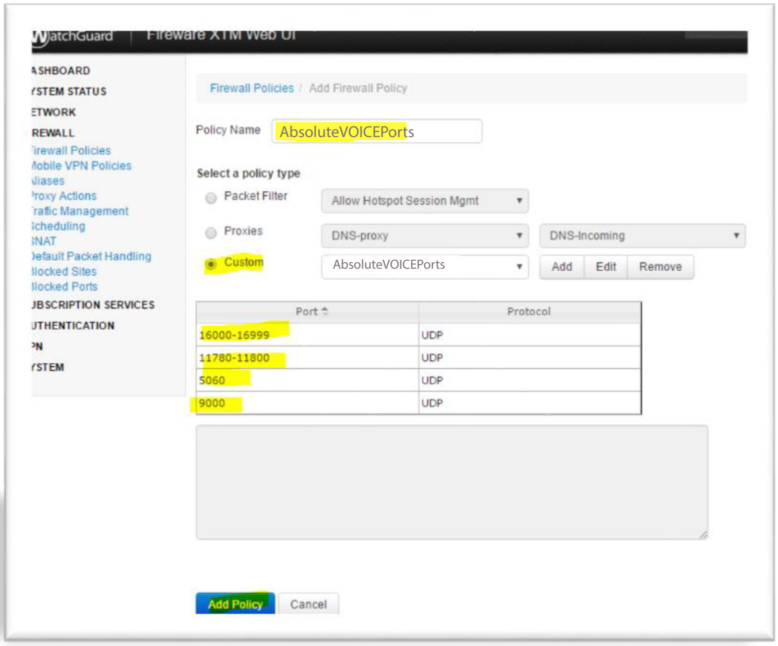
- A “guaranteed Bandwidth” pop-up window will appear. Enter the following:
  - Interface: External
  - Minimum: Enter the minimum speed in Kpbs that you would like to reserve for voice Traffic. As a rule of thumb I would use this formula: ½ Total number of phones * 100K
  - Maximum: Enter the max bandwidth needed using: Total number of phones *100K
    Note: Value of “0” (this will allow the traffic management to burst if needed)
- Click “OK”
- Click “Save”

# Create Firewall Policies

## Firewall → click "Add Policy"



| □ | Actic | Policy Nam | Type | From | To | Port | PBR | Application | Tags |
|---|---|---|---|---|---|---|---|---|---|
| □ | ✓ | FTP | FTP | Any-Trusted | Any-Externa | tcp:21 | | | |
| □ | ✓ | WatchGu | WG-Firewar | Any-Trusted | Firebox | tcp:8080 | | | |
| □ | ✓ | Ping | Ping | Any-Trusted | Any | ICMP (type: | | | |
| □ | ✓ | WatchGu | WG-Firebox | Any-Trusted | Firebox | tcp:4105 tc | | | |
| □ | ✓ | Outgoing | TCP-UDP | Any-Trusted | Any-Externa | tcp:0 udp:0 | | | |



Policy Name: AbsoluteVOICEPorts

Select a policy type

○ Packet Filter: Allow Hotspot Session Mgmt

○ Proxies: DNS-proxy, DNS-Incoming

● Custom: AbsoluteVOICEPorts

| Port | Protocol |
|---|---|
| 16000-16999 | UDP |
| 11780-11800 | UDP |
| 5060 | UDP |
| 9000 | UDP |

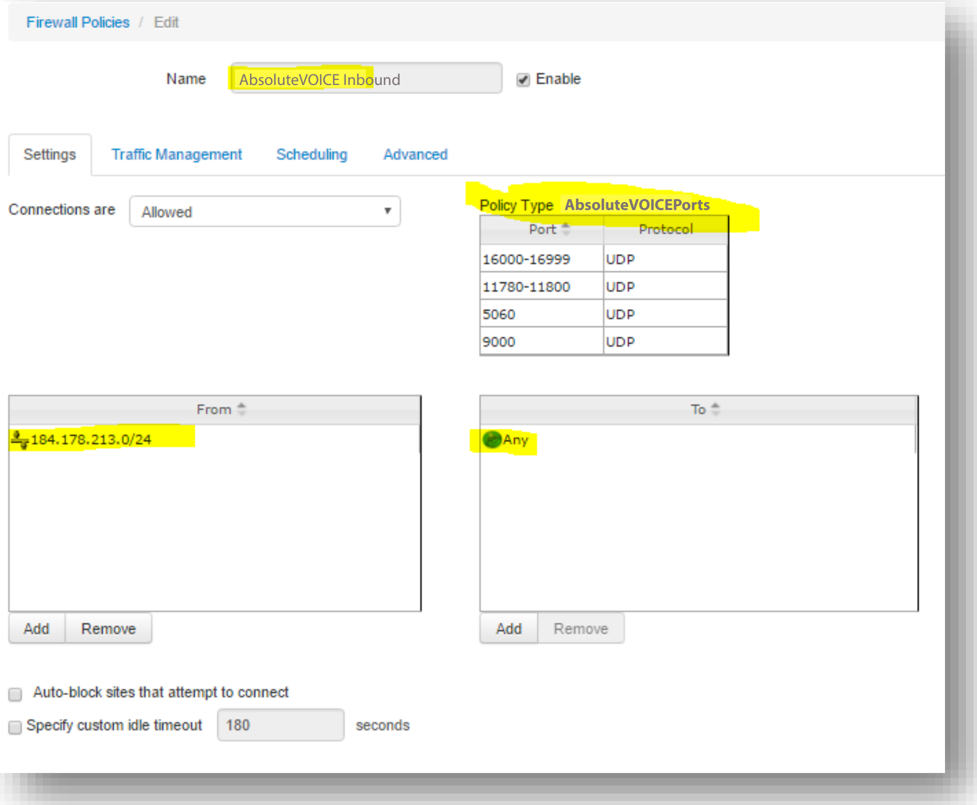
- Select the "Custom" Policy Type
- Select "Add"
  - Enter the following information:
    - Policy Name: AbsoluteVOICEPorts
    - Ports:
      - 16000-16999 UDP
      - 11780-11800 UDP
      - 5060 UDP
      - 9000 UDP
- Click Add Policy

## Create the Inbound Policy

Once the custom policy type is created you can create the Inbound and Outbound Policies.

Inbound Policy:

- Click "Add Policy"
- Name Policy: Absolute VOICE Inbound
- Select "Custom" radio button
- Choose "AbsoluteVOICEPorts" in drop down
- Click "Add Policy"



Firewall Policies / Edit

Name: AbsoluteVOICE Inbound ☑ Enable

Connections are: Allowed

Policy Type: AbsoluteVOICEPorts

| Port | Protocol |
|---|---|
| 16000-16999 | UDP |
| 11780-11800 | UDP |
| 5060 | UDP |
| 9000 | UDP |

From: 184.178.213.0/24

To: Any

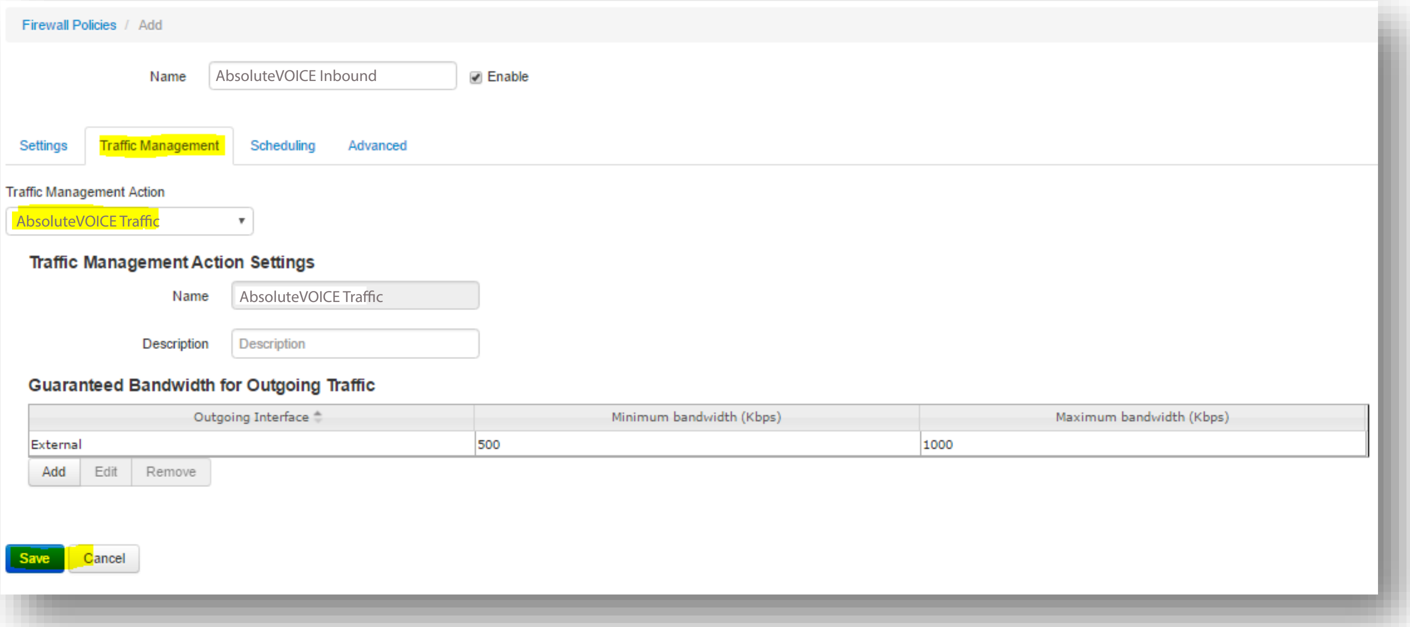
□ Auto-block sites that attempt to connect

□ Specify custom idle timeout 180 seconds

- Enter the following**:**
    - Ensure Policy Name is: Absolute VOICE
    - Connections are: Inbound Allowed
    - Change From network: 184.178.213.0/24
    - Change To network: Any

## Continue Inbound Policy Creation

- Click on the “Traffic Management” tab
  - Select “AbsoluteVOICE Traffic” from the drop down box



Firewall Policies / Add

Name: AbsoluteVOICE Inbound ☑ Enable

Traffic Management Action: AbsoluteVOICE Traffic

**Traffic Management Action Settings**

Name: AbsoluteVOICE Traffic

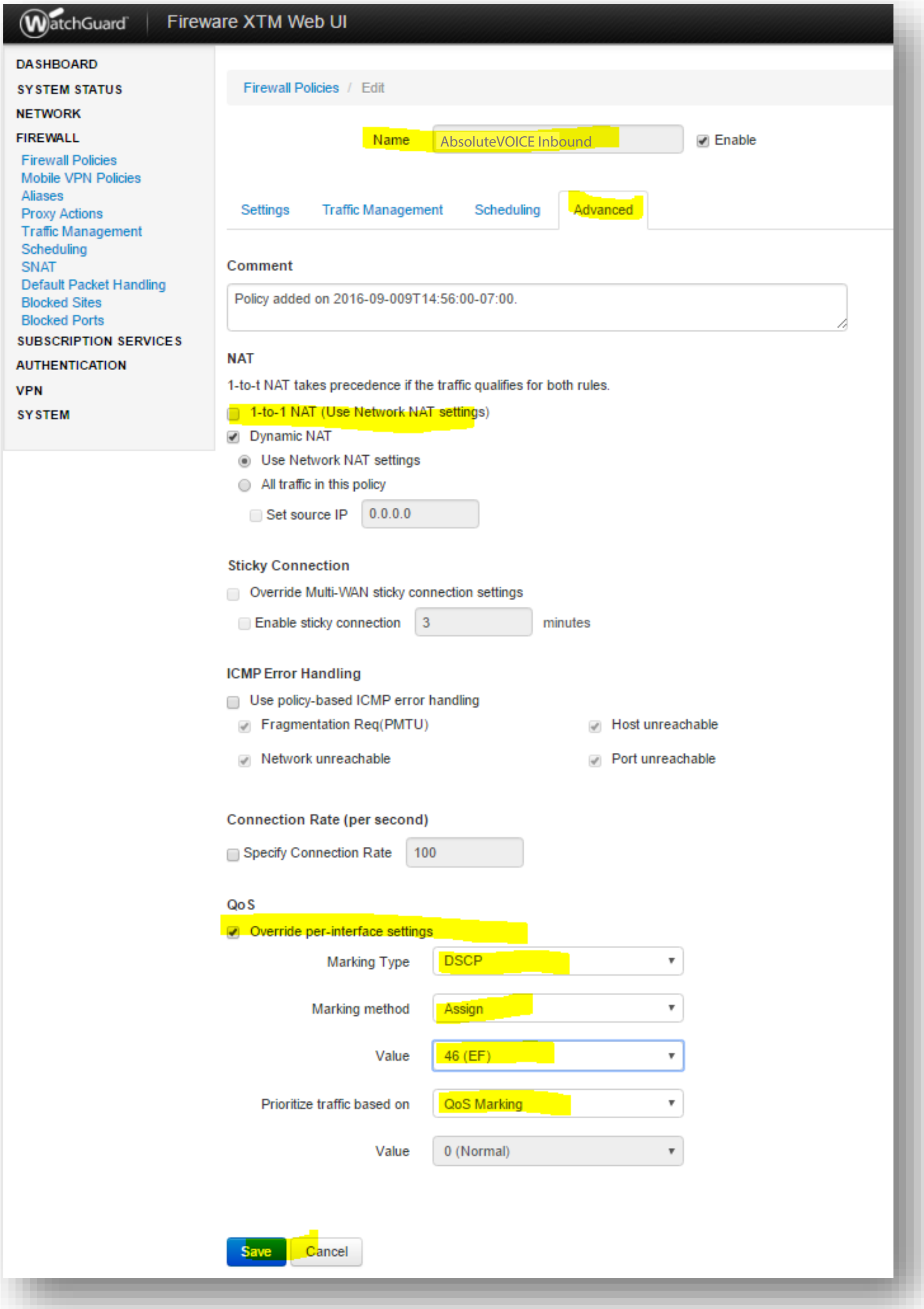
Description: Description

**Guaranteed Bandwidth for Outgoing Traffic**

| Outgoing Interface | Minimum bandwidth (Kbps) | Maximum bandwidth (Kbps) |
|---|---|---|
| External | 500 | 1000 |

## Continue Inbound Policy Creation

- Click on the “Advanced” tab
    - Uncheck the 1-to-1 NAT
    - Check QoS “Override per-interface settings”
        - Marketing type: DSCP
        - Marking Method: Assign
        - Value: 46 (EF)
        - Proritize traffic based on: QoS Marking
- Click Save



Name: AbsoluteVOICE Inbound ☑ Enable

**Comment**

Policy added on 2016-09-009T14:56:00-07:00.

**NAT**

1-to-1 NAT takes precedence if the traffic qualifies for both rules.

□ 1-to-1 NAT (Use Network NAT settings)

☑ Dynamic NAT

● Use Network NAT settings

○ All traffic in this policy

□ Set source IP 0.0.0.0

**Sticky Connection**

□ Override Multi-WAN sticky connection settings

□ Enable sticky connection 3 minutes

**ICMP Error Handling**

□ Use policy-based ICMP error handling

☑ Fragmentation Req(PMTU) ☑ Host unreachable

☑ Network unreachable ☑ Port unreachable

**Connection Rate (per second)**

□ Specify Connection Rate 100

**QoS**

☑ Override per-interface settings

Marking Type: DSCP

Marking method: Assign

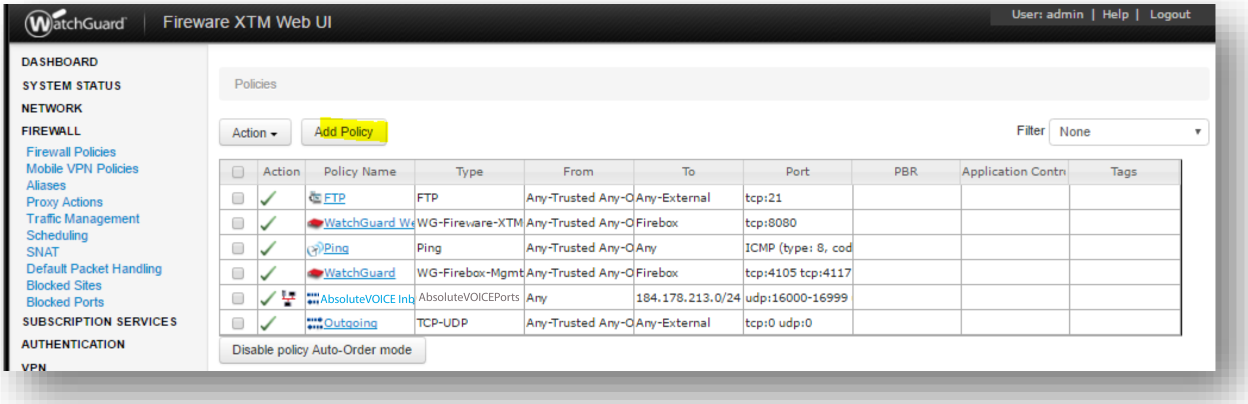
Value: 46 (EF)

Prioritize traffic based on: QoS Marking

Value: 0 (Normal)

# Create Outbound Policy

- Click “Add Policy”



WatchGuard | Fireware XTM Web UI — User: admin | Help | Logout

DASHBOARD
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Mobile VPN Policies
Aliases
Proxy Actions
Traffic Management
Scheduling
SNAT
Default Packet Handling
Blocked Sites
Blocked Ports
SUBSCRIPTION SERVICES
AUTHENTICATION
VPN

Policies

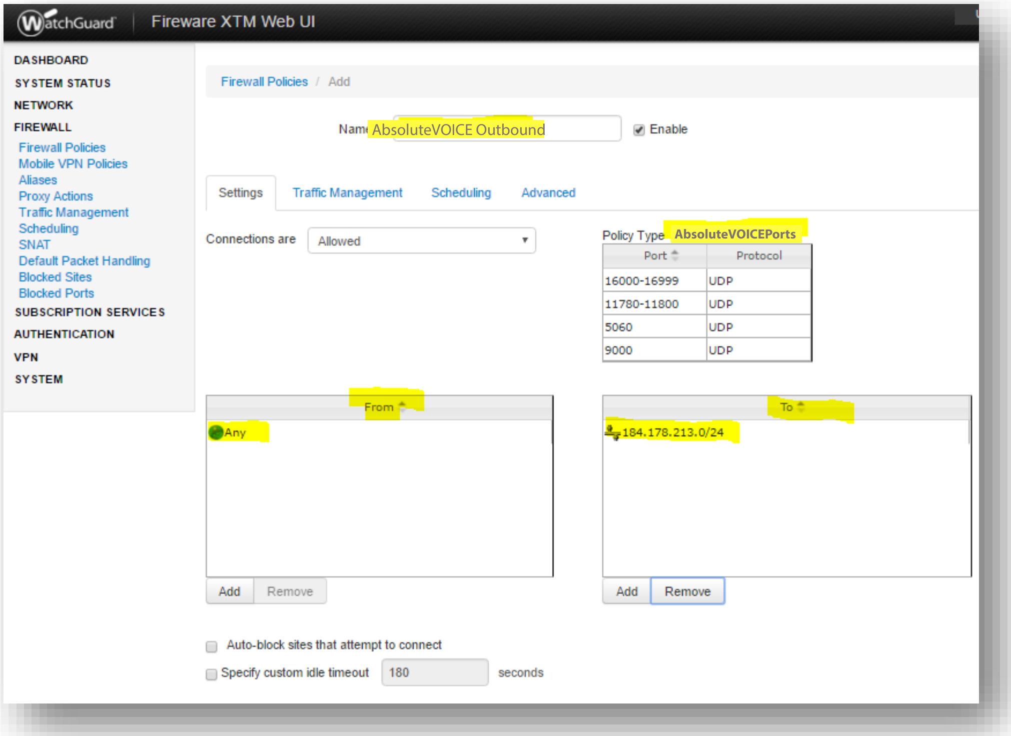
Action ▾ | Add Policy | Filter: None ▾

| □ | Action | Policy Name | Type | From | To | Port | PBR | Application Contr | Tags |
|---|---|---|---|---|---|---|---|---|---|
| □ | ✓ | FTP | FTP | Any-Trusted Any-O | Any-External | tcp:21 | | | |
| □ | ✓ | WatchGuard We | WG-Fireware-XTM | Any-Trusted Any-O | Firebox | tcp:8080 | | | |
| □ | ✓ | Ping | Ping | Any-Trusted Any-O | Any | ICMP (type: 8, cod | | | |
| □ | ✓ | WatchGuard | WG-Firebox-Mgmt | Any-Trusted Any-O | Firebox | tcp:4105 tcp:4117 | | | |
| □ | ✓ | AbsoluteVOICE Inb | AbsoluteVOICEPorts | Any | 184.178.213.0/24 | udp:16000-16999 | | | |
| □ | ✓ | Outgoing | TCP-UDP | Any-Trusted Any-O | Any-External | tcp:0 udp:0 | | | |

Disable policy Auto-Order mode

- Enter the following:
  - Policy Name: Absolute VOICE Outbound
  - Policy Type: Customer → AbsoluteVOICE Ports (in drop down)
  - Click Add Policy

- Enter the following:
  - Ensure Policy Name is: Absolute VOICE
  - Connections are: Outbound Allowed
  - Change From network: Any
  - Change To network: 184.178.213.0/24



WatchGuard | Fireware XTM Web UI

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AUTHENTICATION
VPN
SYSTEM

Firewall Policies / Add

Name AbsoluteVOICE Outbound ☑ Enable

Settings | Traffic Management | Scheduling | Advanced

Connections are: Allowed ▾

Policy Type AbsoluteVOICEPorts

| Port | Protocol |
|---|---|
| 16000-16999 | UDP |
| 11780-11800 | UDP |
| 5060 | UDP |
| 9000 | UDP |

From: Any

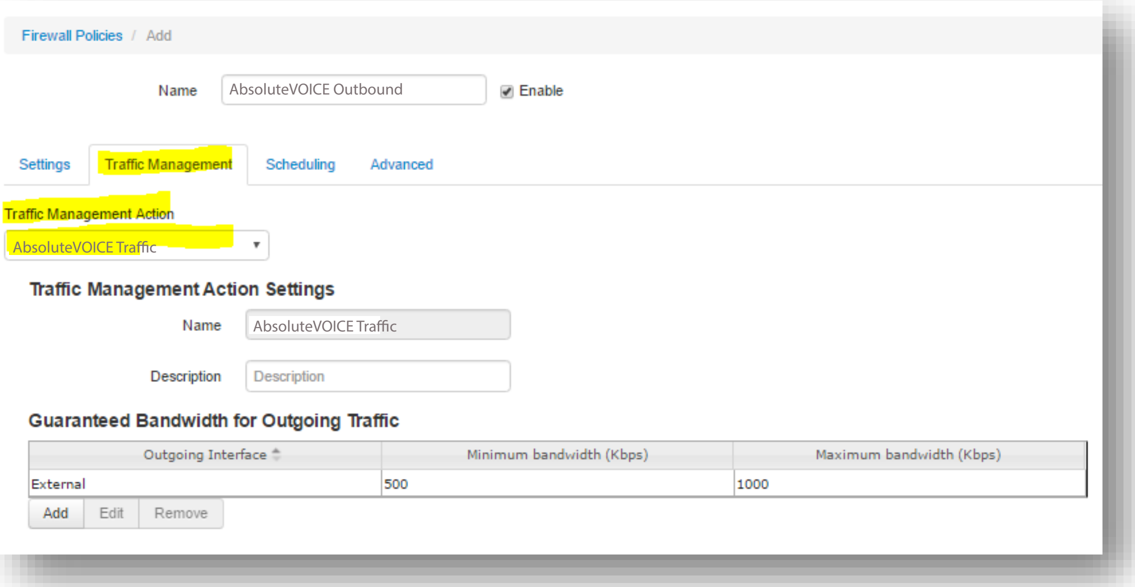
To: 184.178.213.0/24

□ Auto-block sites that attempt to connect

□ Specify custom idle timeout 180 seconds

## Continued Outbound Policy

- Click “Traffic Management” tab
    - ○
    - Choose the “AbsoluteVOICE Traffic” from the drop down



Name: AbsoluteVOICE Outbound ☑ Enable

Traffic Management Action: AbsoluteVOICE Traffic ▾

### Traffic Management Action Settings

Name: AbsoluteVOICE Traffic

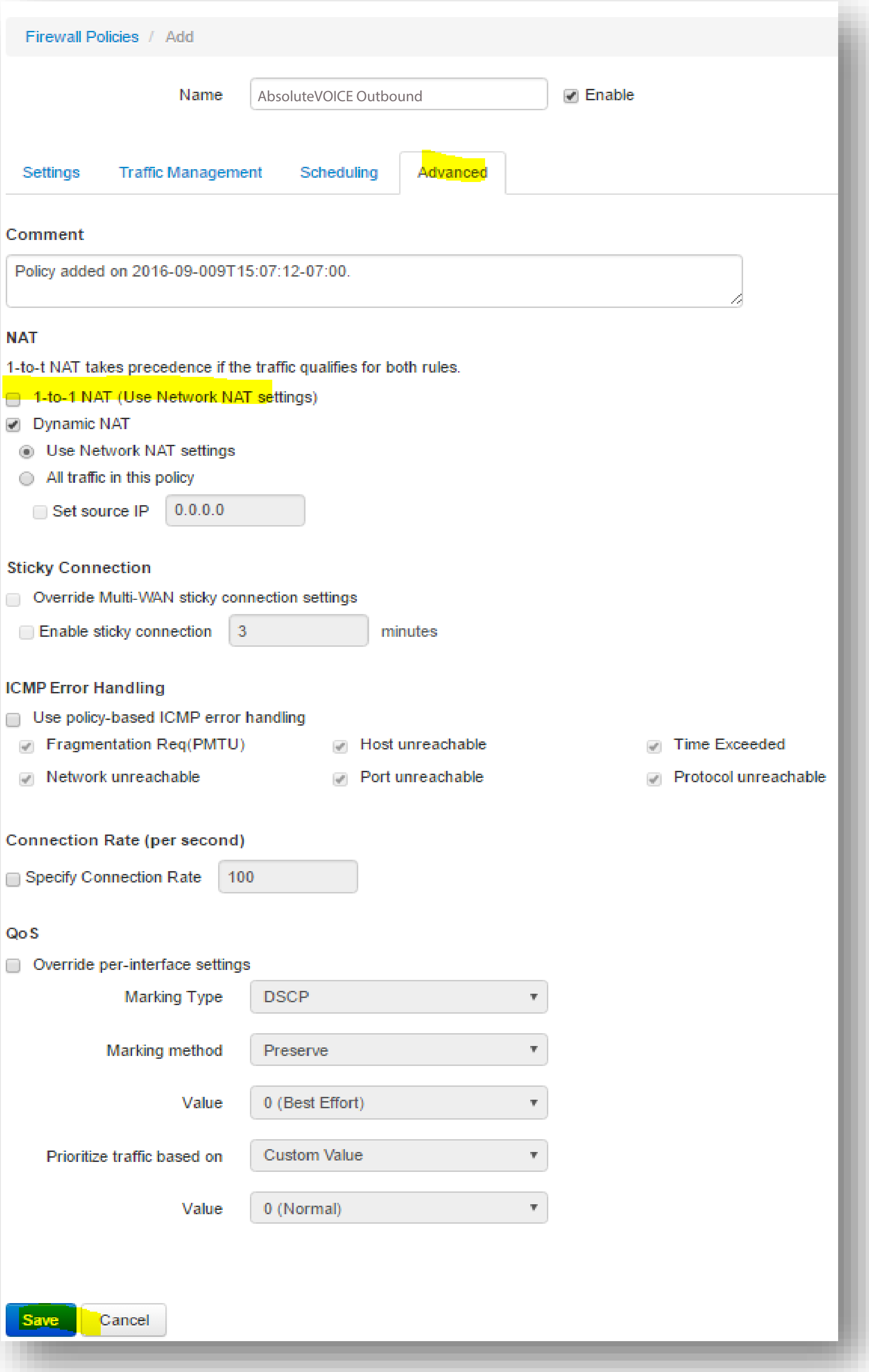
Description: Description

### Guaranteed Bandwidth for Outgoing Traffic

| Outgoing Interface | Minimum bandwidth (Kbps) | Maximum bandwidth (Kbps) |
|---|---|---|
| External | 500 | 1000 |

## Continued Outbound Policy

- Click on the “Advanced” tab
    - Uncheck 1-to-1 NAT
- Click “Save”



Firewall Policies / Add

Name: AbsoluteVOICE Outbound ☑ Enable

**Comment**

Policy added on 2016-09-009T15:07:12-07:00.

**NAT**

1-to-t NAT takes precedence if the traffic qualifies for both rules.

□ 1-to-1 NAT (Use Network NAT settings)

☑ Dynamic NAT

● Use Network NAT settings

○ All traffic in this policy

□ Set source IP: 0.0.0.0

**Sticky Connection**

□ Override Multi-WAN sticky connection settings

□ Enable sticky connection: 3 minutes

**ICMP Error Handling**

□ Use policy-based ICMP error handling

☑ Fragmentation Req(PMTU) ☑ Host unreachable ☑ Time Exceeded

☑ Network unreachable ☑ Port unreachable ☑ Protocol unreachable

**Connection Rate (per second)**

□ Specify Connection Rate: 100

**QoS**

□ Override per-interface settings

Marking Type: DSCP

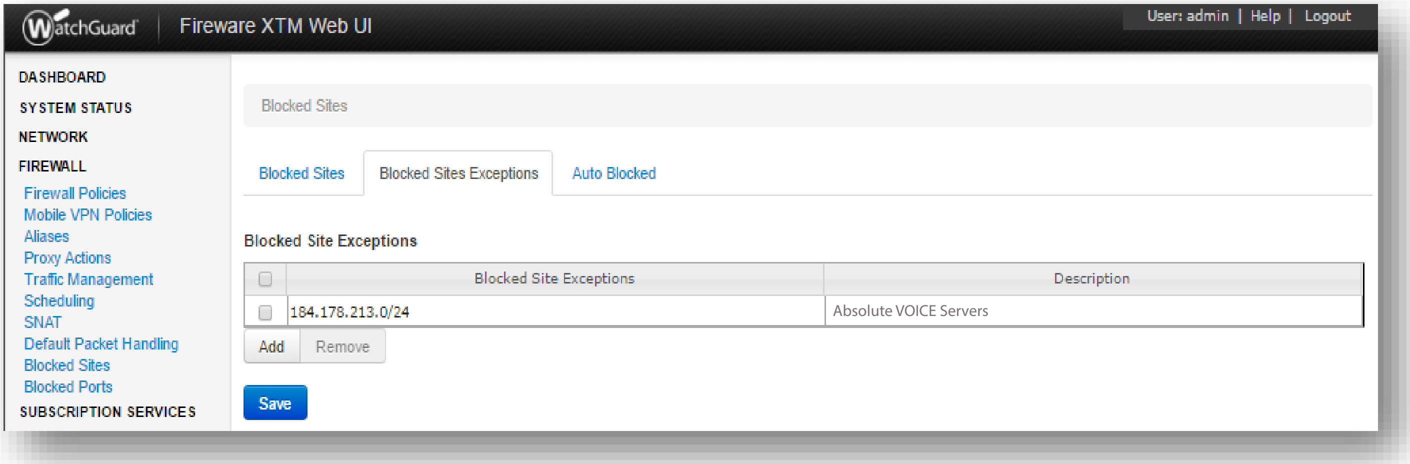
Marking method: Preserve

Value: 0 (Best Effort)

Prioritize traffic based on: Custom Value

Value: 0 (Normal)

## Firewall → Blocked Sites → Blocked Sites Exceptions tab



Blocked Site Exceptions

| □ | Blocked Site Exceptions | Description |
|---|---|---|
| □ | 184.178.213.0/24 | Absolute VOICE Servers |

- Add the Absolute VOICE Servers/subnet to the "Exclusion" list
  - 184.178.213.0/24
- Click "Save"

Note: This will prevent the Watchguard from accidentally blocking SIP traffic based on the port scan IPS policies.

# Document Revision History

| Version | Reason for Change | Date |
|---|---|---|
| **1.0 Draft** | Initial Draft Document | October 18, 2013 |
| **2.0 Draft** | Updated to reflect new web GUI and white list Absolute VOICE subnets to resolve port scan scenario. | August 8, 2016 |
| **2.1** | Firewall Checklist added | March 17th, 2017 |