Ignition Server

Ignition Guest Management

Wireless LAN 8100

**Engineering**

# > Ignition Guest Management for Wireless LAN 8100 Technical Configuration Guide

**Avaya Data Solutions**

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# Abstract

This Technical Configuration Guide outlines the configuration steps required to create an authenticated network infrastructure for wireless guest users. The main components include the Avaya Wireless LAN 8100, access control provided by the Avaya Ignition Server and guest user provisioning provided by the Ignition Guest Manager.

The audience for this Technical Configuration Guide is intended to be Avaya Sales teams, Partner Sales teams and end-user customers.

# Revision Control

| No | Date | Version | Revised By | Remarks |
|---|---|---|---|---|
| 1 | 17 Dec 2010 | 1.0 | KLM | Initial Draft |
| 2 | 5 July 2011 | 1.1 | KLM | Minor Correction in Section 2.3.1.1 |
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# Conventions

This section describes the text, image, and command conventions used in this document.

## Symbols

Tip – Highlights a configuration or technical tip.

Note – Highlights important information to the reader.

Warning – Highlights important information about an action that may result in equipment damage, configuration or data loss.

## Text

**Bold** text indicates emphasis.

***Italic*** text in a Courier New font indicates text the user must enter or select in a menu item, button or command:

```
ERS5520-48T# show running-config
```

Output examples from Avaya devices are displayed in a Lucida Console font:

```
ERS5520-48T# show sys-info

Operation Mode:        Switch
MAC Address:           00-12-83-93-B0-00
PoE Module FW:         6370.4
Reset Count:           83
Last Reset Type:       Management Factory Reset
Power Status:          Primary Power
Autotopology:          Enabled
Pluggable Port 45:     None
Pluggable Port 46:     None
Pluggable Port 47:     None
Pluggable Port 48:     None
Base Unit Selection:   Non-base unit using rear-panel switch
sysDescr:              Ethernet Routing Switch 5520-48T-PWR
                       HW:02       FW:6.0.0.10  SW:v6.2.0.009
                       Mfg Date:12042004    HW Dev:H/W rev.02
```

# 1. Overview

Guest access is one of the most pervasive applications of wireless networking and most wireless infrastructure vendors offer guest access features. However most wireless guest access solutions are impractical as they either require dedicated resources such as front desk personnel or IT helpdesk staff to provision accounts or require privileged access into the infrastructure devices opening the core network to potential security risks.

To eliminate the management overhead many enterprises deploy 24x7 open networks which are susceptible to abuse or authenticated networks with fixed credentials which over time are shared and diluted. Neither approach is optimal or recommended as they provide no means of identifying the end-user nor do they provide the means of offering tier services to differing classes of users.

The Avaya guest management solution outlined in this guide provides enterprises with an easy to deploy and manage suite of products and applications that allows:

1) Authenticated wireless access using a captive-portal for guest users or temporary staff using notebook PCs, tablets, PDAs or smart phones.
2) Simplified guest user provisioning by corporate end-users (sponsors) which offloads the task of creating and managing guest user accounts from front-desk personnel or IT staff.
3) Ability assign specific network access or restrictions based different guest user classes such as visitors, contractors or temporary employees.

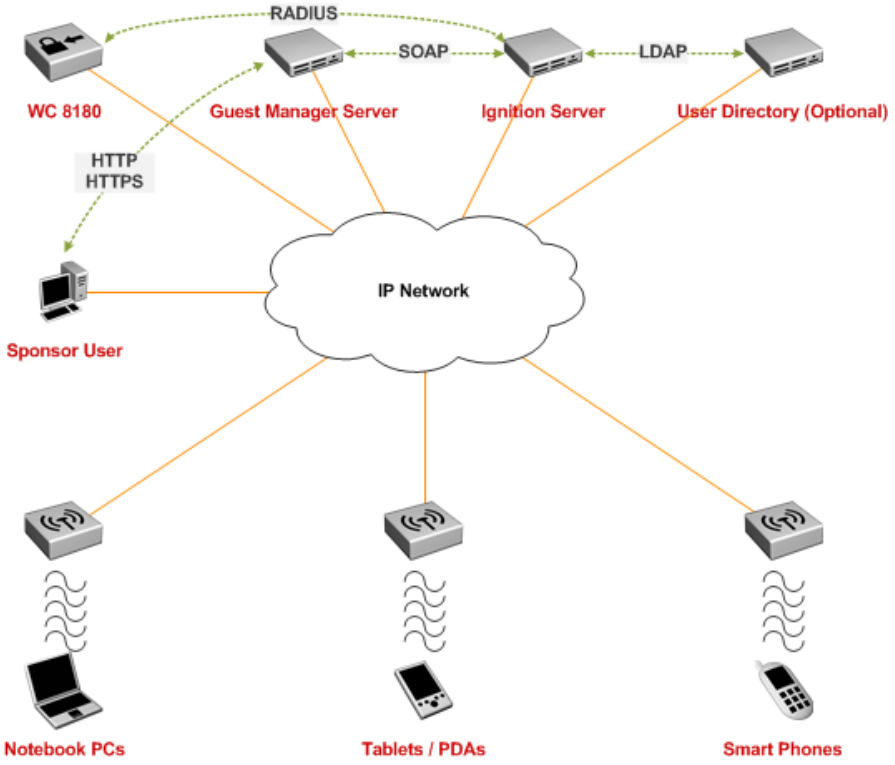



**Figure 1.0 – Avaya Wireless Guest Management Solution**

## 1.1 Solution Components

The Avaya wireless guest management solution consists of the following software and hardware components:

1. Configuration and Management:
   - *Ignition Dashboard Application* – A Windows based application used to configure and manage the Ignition Server that provides RADIUS authentication, authorization and accounting.
   - *Guest Manager Administrator Application* – A web-based application for administrators to manage provisioner users, templates and optionally perform bulk updates for guest users.
   - *Guest Manager Provisioner Application* – A web-based application for corporate end-users (sponsors) to create and manage guest user accounts without IT or front-desk personnel intervention.
2. Access Control:
   - *Ignition Server* – Authenticates and authorizes guest users who wish to connect to the network and captures accounting information.
   - *Optional External User Directory* – Active Directory or LDAP user store which can be queried by the Ignition Server to authenticate and authorize corporate end-users who wish to create guest user accounts.
3. Authenticator:
   - *Avaya Wireless LAN 8100* – Provides captive-portal authentication for the guest users which is authenticated using RADIUS against the Ignition Server where the guest user accounts reside.

## 1.2 Hardware & Software

The following diagram depicts the hardware and software components and the topology used to create this guide:

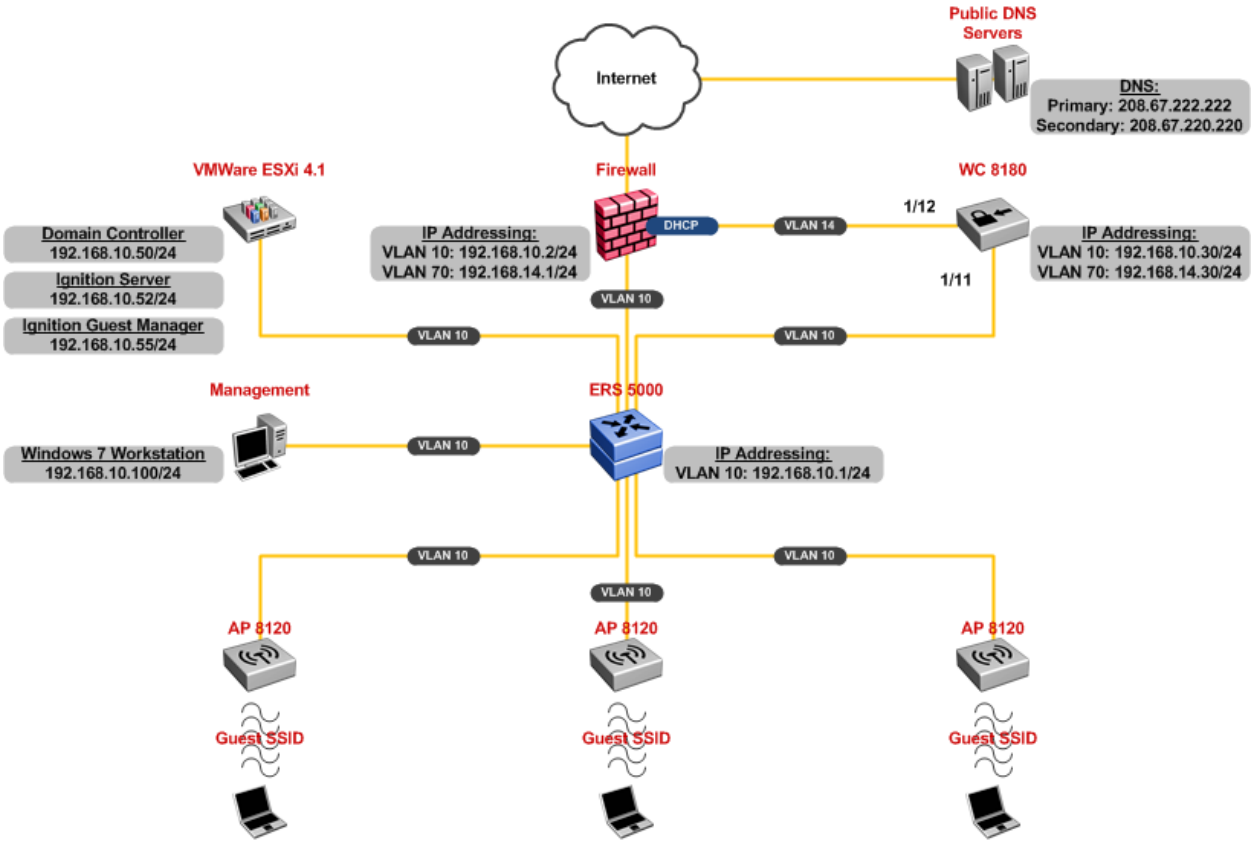



**Figure 1.1 – Topology**

The following table highlights the hardware and software outlined above used to create this guide:

| Hardware and Software Components |
|---|
| Dell PowerEdge D610 Server – VMWare ESXi Version 4.1.0:<br>• Avaya Ignition Server – Version 07.00.00.020468<br>• Microsoft Windows Server 2003 Enterprise Edition with Service Pack 2:<br>  ○ Avaya Ignition Guest Manager – Version 07.00.00.020468<br>• Microsoft Windows Server 2003 Enterprise Edition with Service Pack 2:<br>  ○ Active Directory Services<br>  ○ DNS Services |
| Avaya Secure Router 2330 – Version 10.3 |
| Avaya Ethernet Routing Switch 5520-48T-PWR – Version 6.2.0.009 |
| Avaya WLAN 8100 Series – Version 1.0.1.007<br>• 1 x WLAN Controller 8180<br>• 3 x WLAN Access Point 8120 |
| IBM Thinkpad T60 – Windows 7 Enterprise:<br>• Java Runtime – Version 6 Update 20 (Standard Edition)<br>• Ignition Dashboard – Version 7.0<br>• Mozilla Firefox – Version 3.6.10<br>• Internet Explorer – Version 8.0 |

**Table 1.1 – Hardware and Software**

# 2. Configuration Example

## 2.1 Ignition Server

The following sections outline the configuration steps required to configure the Avaya Ignition Server for Guest Access:

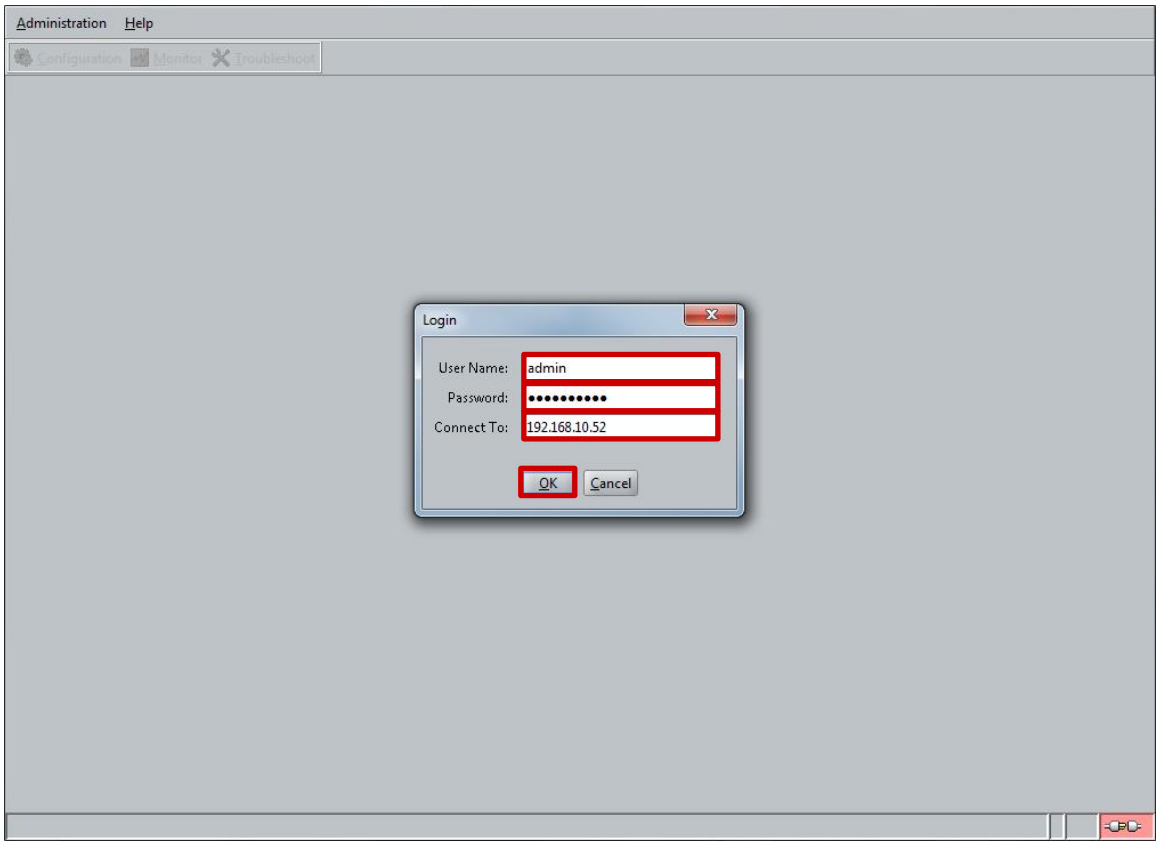
### 2.1.1 Ignition Server Login

The Avaya Ignition Server is configured using an Ignition Dashboard application that is installed on a Windows PC. The Ignition Dashboard can communicate with the Ignition Server using an IP Address assigned to the *Admin Port* (default) or *Service Port* (optional). All configuration & management tasks are performed using this application.

To use the Ignition Dashboard application the Ignition Server must be pre-configured with an IP address, subnet mask and default route. If IP addressing has not been defined on the Ignition Server, please follow the configuration steps provided in the *Avaya Identity Engines Ignition Server Getting Started* guide which is available on the Avaya support site http://support.avaya.com.

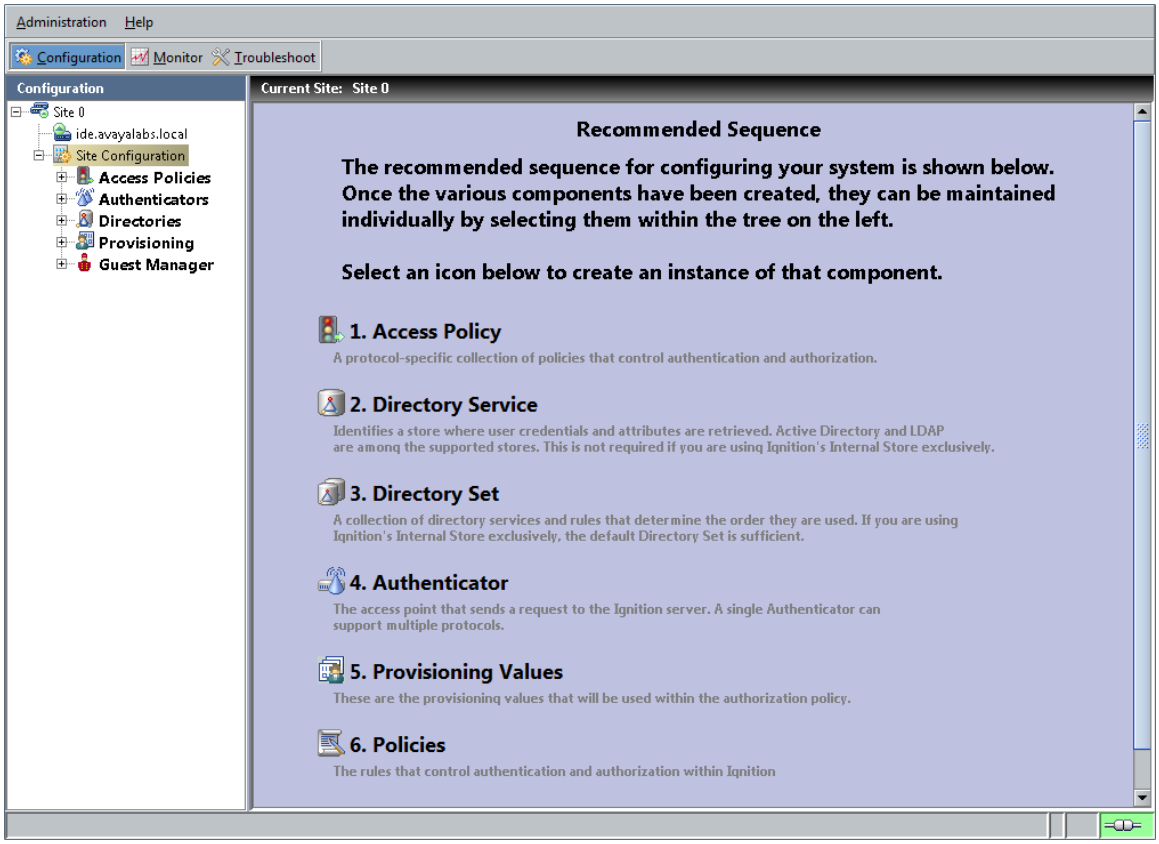
To access and login to the Ignition Server using the Ignition Dashboard:

**1 Launch the *Ignition Dashboard* application then enter the administrative *Username* and *Password*. In the Connect To field enter the *IP address* assigned to the *Admin Port* or *Service Port* then click *OK*:**



The default username and password for the Ignition Server is ***admin*** / ***admin***.

**2 A *Site Configuration* window with the recommended configuration sequence will be displayed:**




You may click on each heading in the Site Configuration window to quickly configure each component.

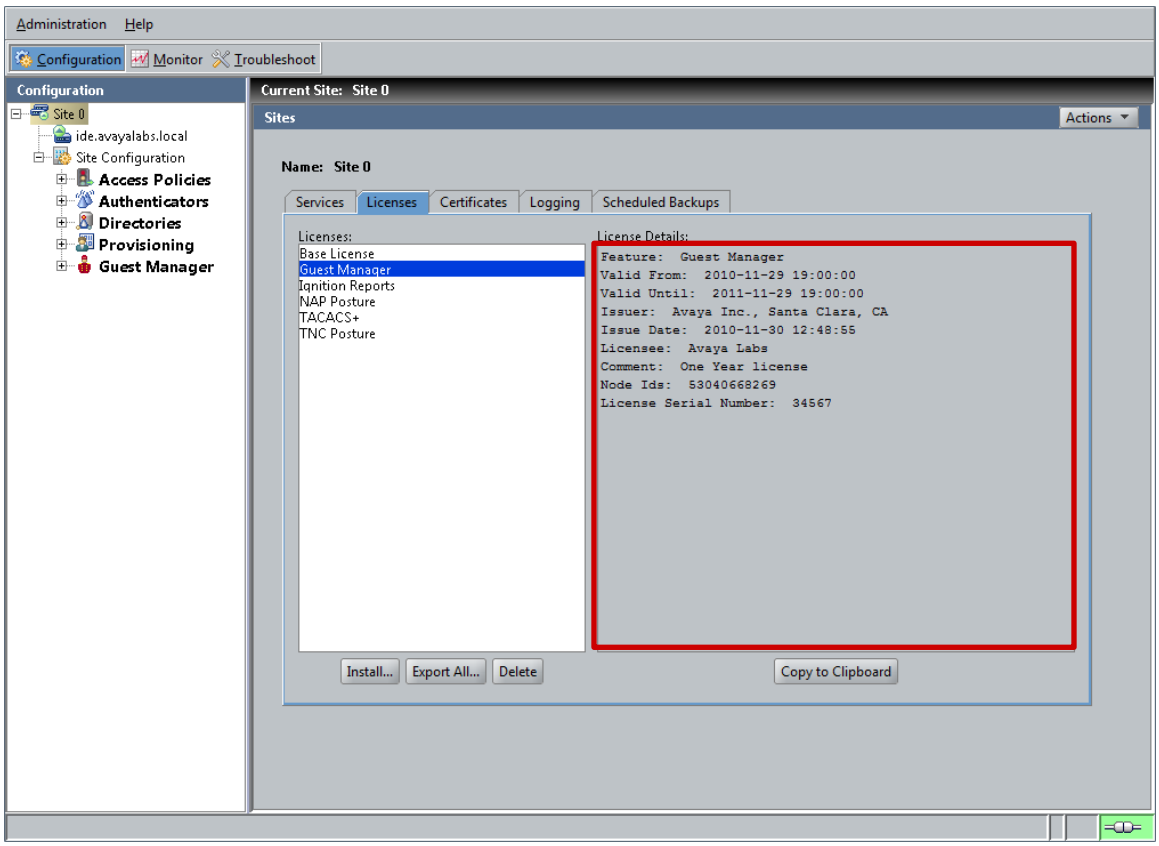
## 2.1.2 Licenses

The Ignition Server ships without any licenses pre-installed. To provide guest services the Ignition Server will require a *Base License* as well as a *Guest Manager License*. Other licenses such as *Posture License*, *TACACS+ License*, and *Ignition Reports License* may also be installed but are not required for guest services.

Evaluation licenses for the Ignition Server can be obtained from the main Avaya Site by visiting http://www.avaya.com/usa/product/identity-engines-portfolio.

To verify or install a ***Base License*** and ***Guest Manager License*** on Ignition Server:

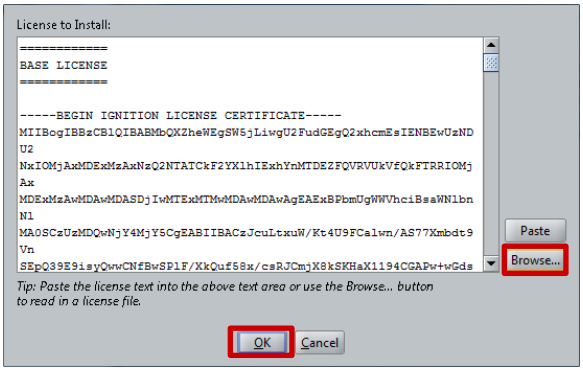
**1 Within the *Ignition Dashboard* select *Configuration > Site-Name > Licenses*. This will display all the purchased or evaluation licenses that have been installed on the Ignition Server:**

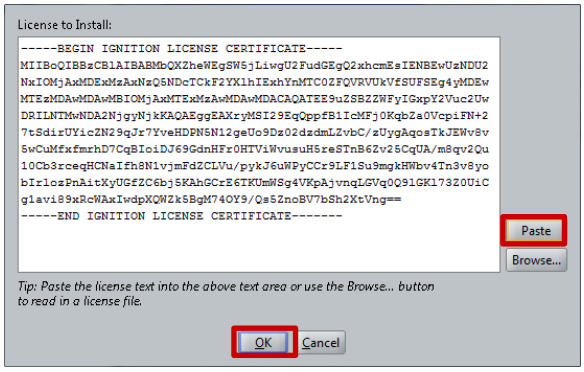


**2 To install a *Base License* or *Guest Manager License* on the Ignition Server:**

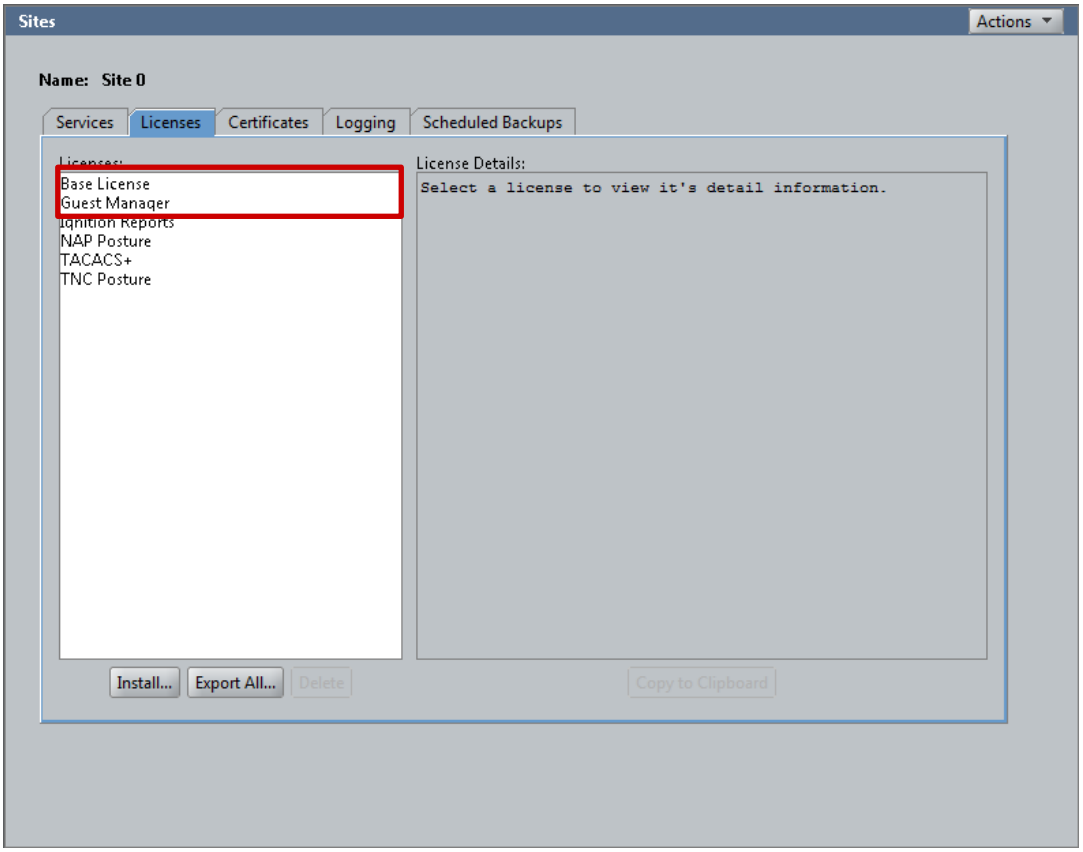
1) **Select *Browse* and select the path and filename of the license file to install. This will install all the evaluation or purchased licenses at one time.**
2) **Alternatively copy the license key to the Windows clipboard then select *Paste*. This will install one evaluation or purchased license at a time.**

**Click *OK* when completed:**




**3 The following shows an Ignition Server with the *Base License* and *Guest Manager License* installed:**



## 2.1.3 Directory Sets

Directory sets are an ordered list of user lookup services used by the Ignition Server when it processes an authentication request. The directory set determines where the user account information is located (i.e. local, Active Directory, LDAP etc.), which service is used to retrieve the user's account information, and which service is used to retrieve authorization data such as attributes and group membership.

When a guest user account is added by the Ignition Guest Manager, it is created in the internal store (local database) on the Ignition Server. To be able to authenticate guest users form the internal store, a directory set and identity routing policy must be created.

### 2.1.3.1 Configuration Steps

For this configuration step a directory set named ***Internal*** will be created that will authenticate guest users against the ***Internal User Store***:

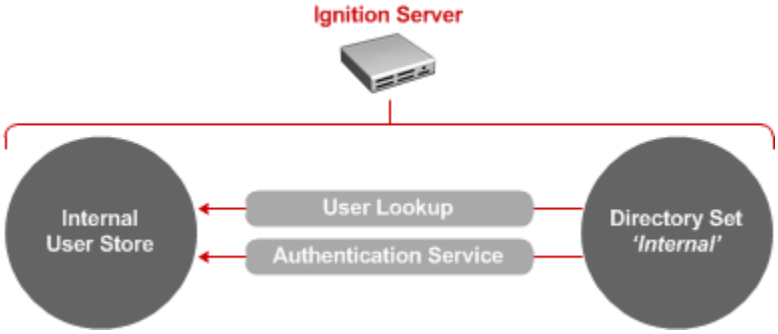
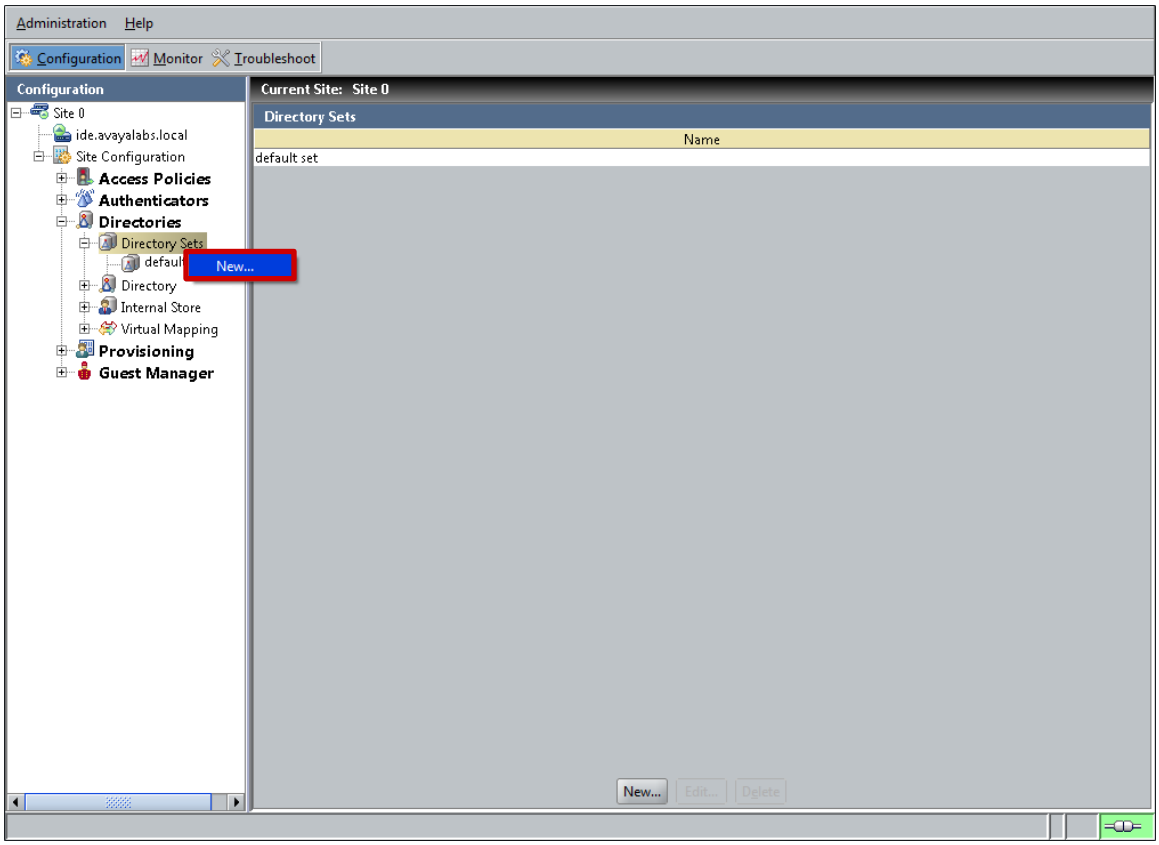
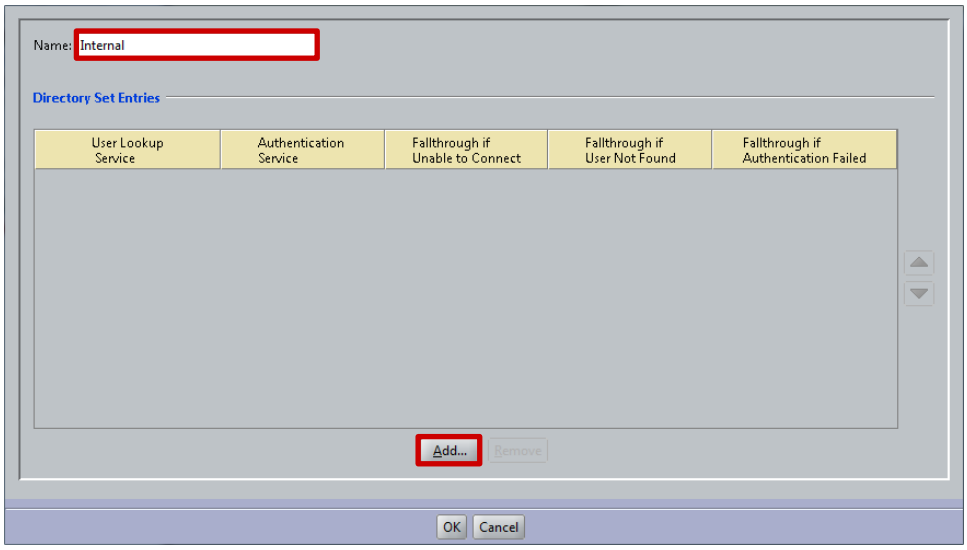



**Figure 2.1.3.1 – Directory Set**

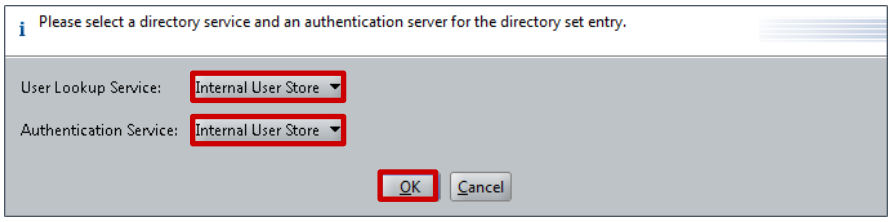
**1 Within the *Ignition Dashboard* select *Configuration* > *Site Configuration* > *Directories* > *Directory Sets*. *Right click* on *Directory Sets* then select *New*:**



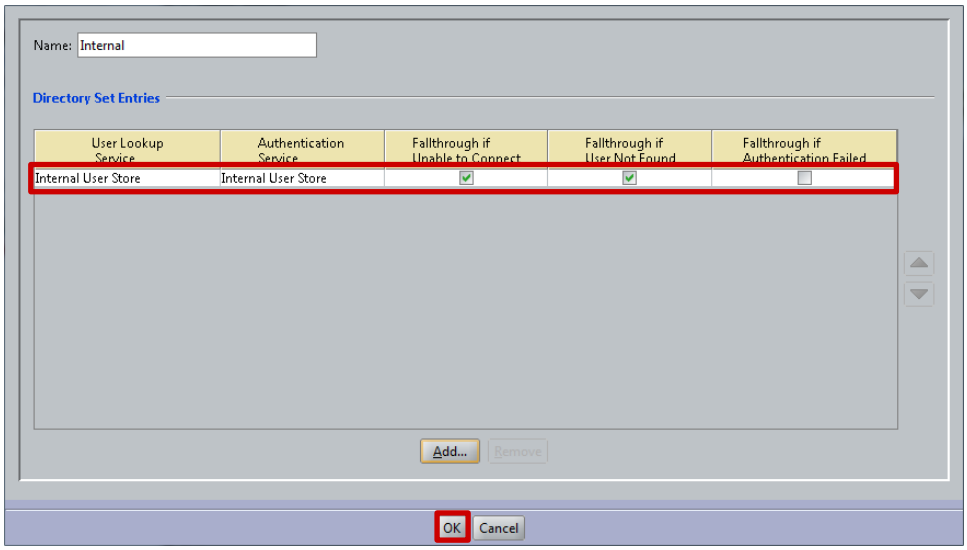

**2 In the *Directory Set* window provide enter the name *Internal*. Click *Add*:**



**3 In the *Directory Set Entry* window set the *Lookup Service* and *Authentication Services* to *Internal User Store*. Click *OK*:**




**4 A *Directory Set Entry* named *Internal* has now been created. Click *OK*:**



## 2.1.4 Groups

Each guest user account is assigned to an internal group in the internal store on the Ignition Server. Groups allow the Ignition Server to differentiate between different classes of guest users then apply different network permissions such as to authenticated sessions such as time-of-day, day-of-week or bandwidth restrictions.

### 2.1.4.1 Configuration Steps

For this configuration step two internal groups named ***Contractors*** and ***Visitors*** will be created. Both groups will have ***Type*** set to ***accessType*** which will display groups in Ignition Server Guest Manager Application allowing them to be assigned to provisioning groups:

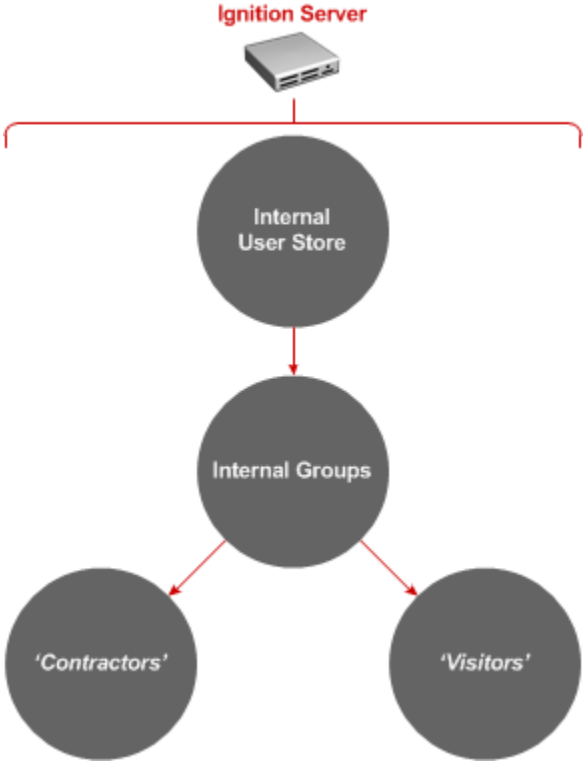
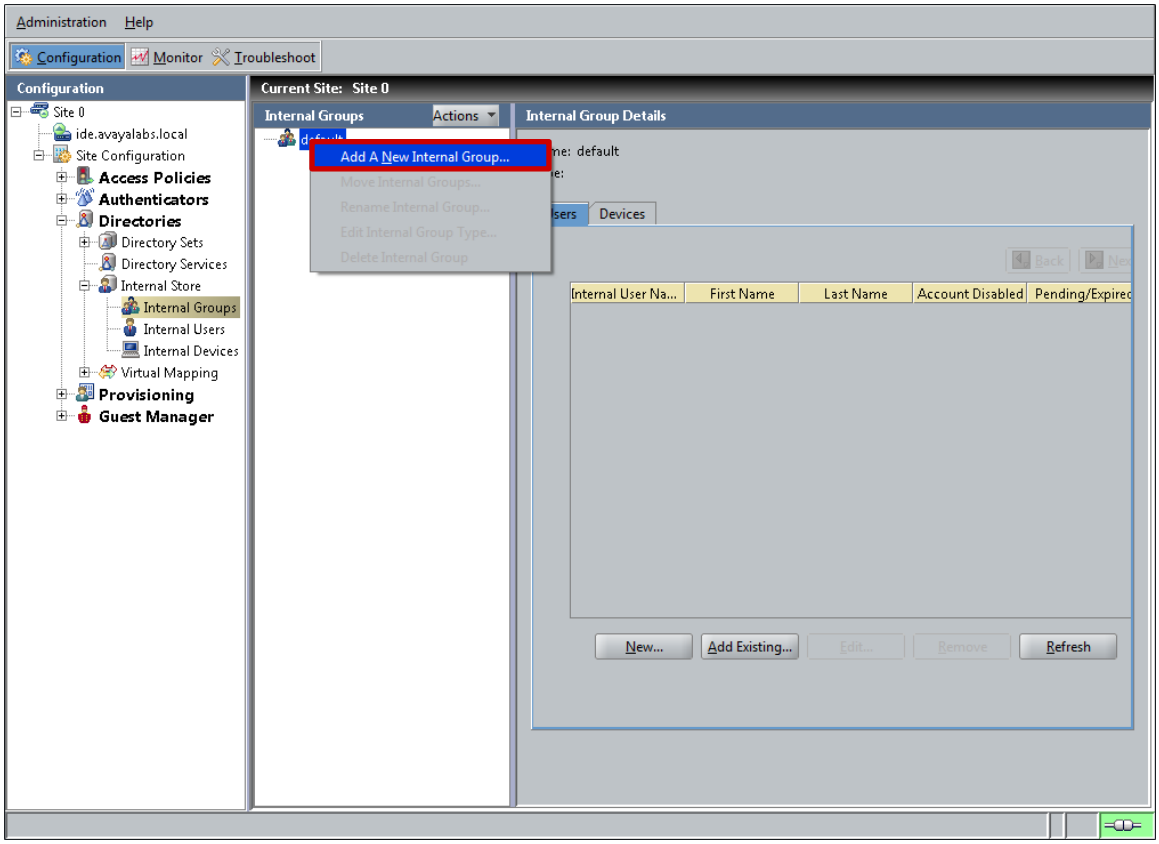
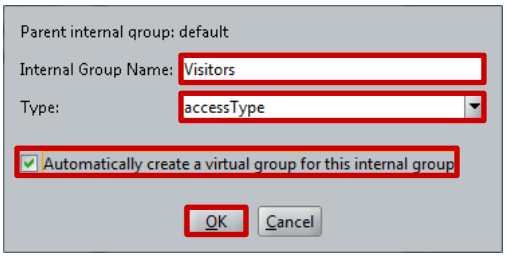


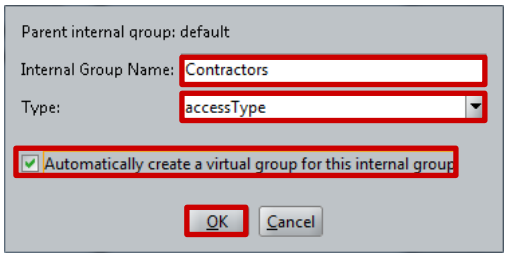

**Figure 2.1.4.1 – Internal Groups**

**1 Within the *Ignition Dashboard* select *Configuration > Site Configuration > Directories > Directory Sets > Internal Groups*. *Right click* on *default* then then select *Add A New Internal Group*:**




**2 Enter the *Internal Group* name *Visitors* then set the group *Type* to *accessType*. Check the option *Automatically create a virtual group for this internal group* then click *OK*. Repeat for a second group called *Contractors*:**



## 2.1.5 Access Policies

Access policies are a set of rules that governs user authentication, authentication protocol support, the search order for user lookups, session authorization and provisioning. Access policies control how users are permitted to use the network as well as how the authentication transaction is performed.

### 2.1.5.1 Configuration Steps

For this configuration step:

1) An access policy named ***Internal*** will be created with ***PAP*** support with a routing policy mapped to the directory set named ***Internal*** created in section 2.1.3.
2) An authorization policy will be created for the group named ***Visitors*** which only permits access ***Monday*** – ***Friday*** from ***8:00AM*** → ***5:00PM***.
3) An authorization policy will be created for the group named ***Contractors*** with no restrictions.

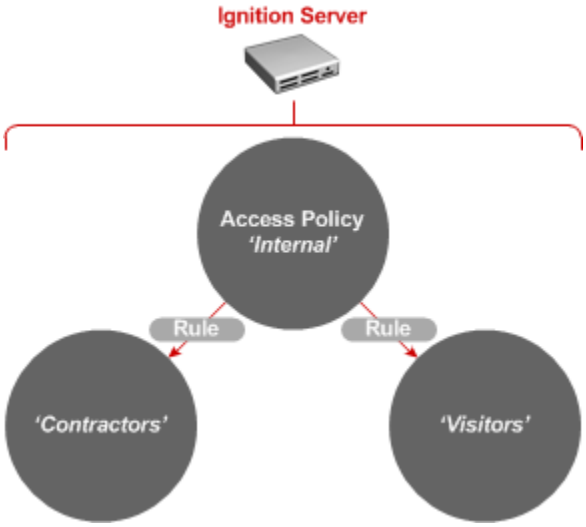
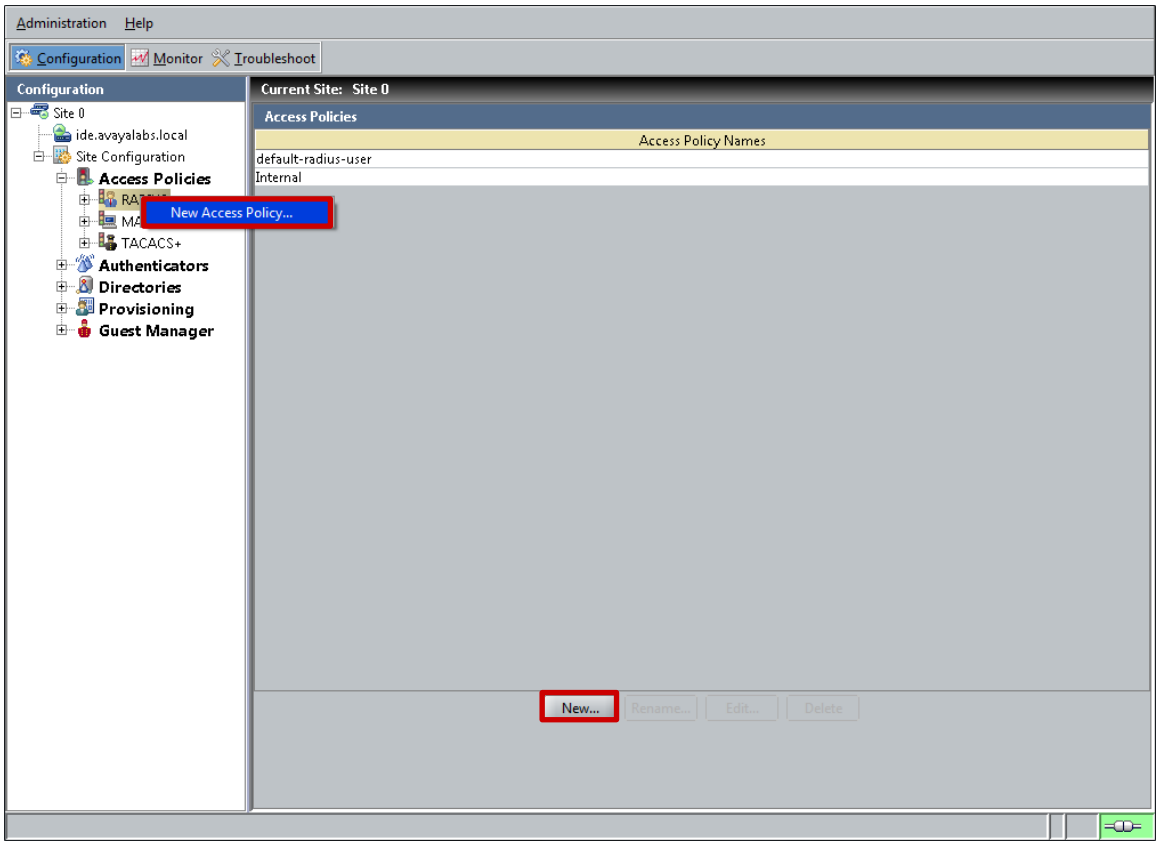
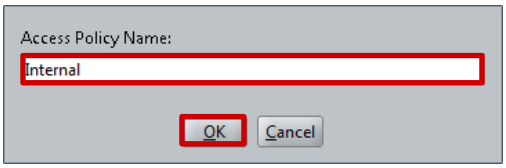



**Figure 2.1.5.1 – Access Policy**

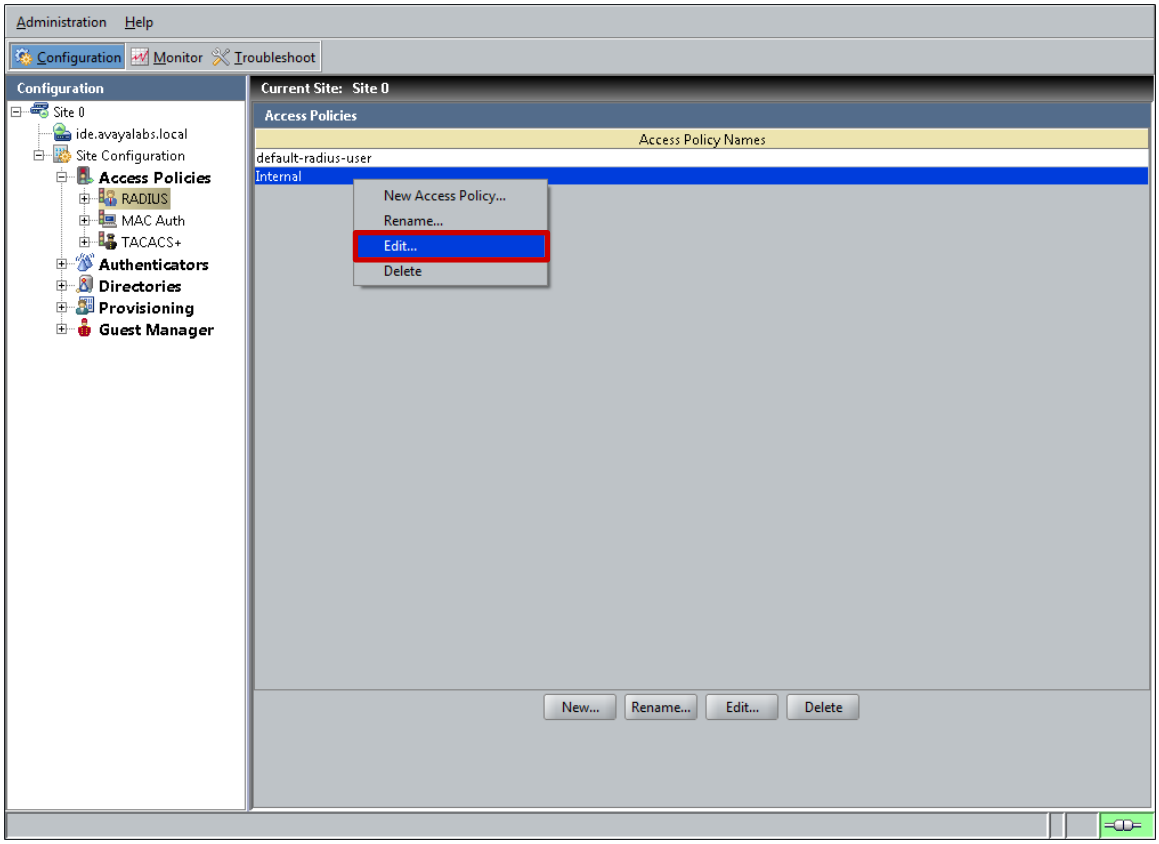
**1 Within the *Ignition Dashboard* select *Configuration* > *Site Configuration* > *Access Policies*. *Right click* on *RADIUS* then click *New Access Policy*:**



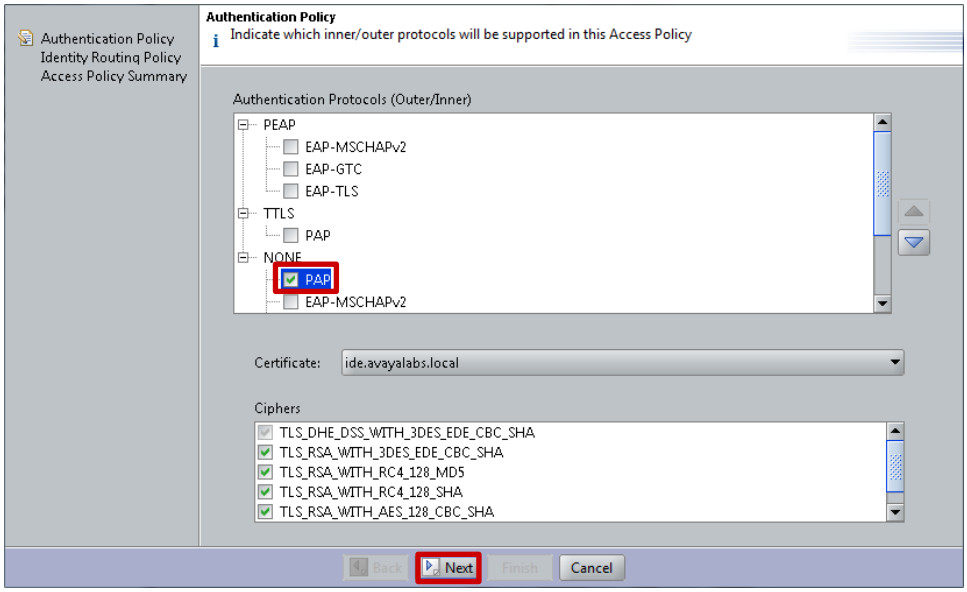

**2 Set the *Access Policy Name* to Internal then click *OK*.**



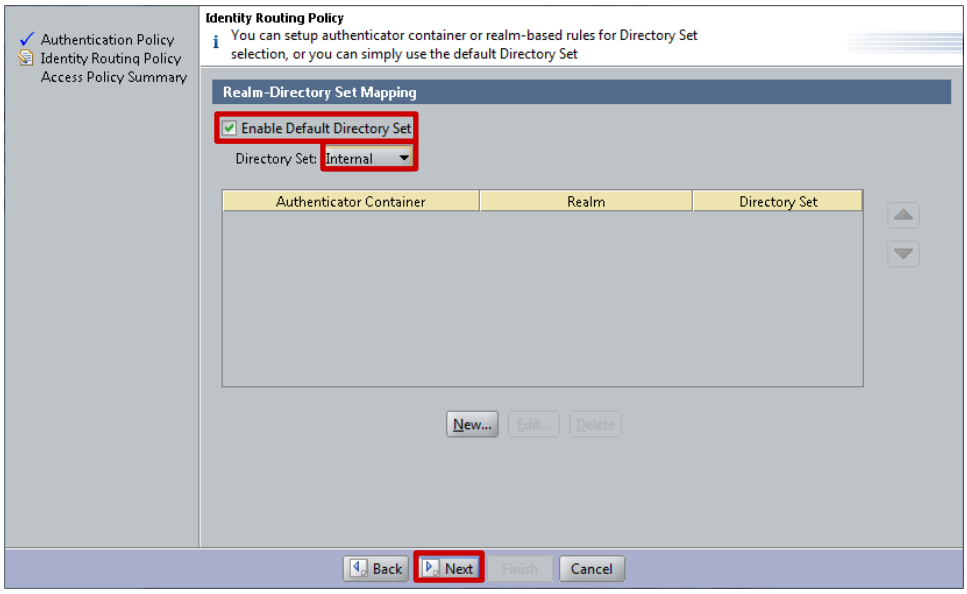
**3 In the *Access Policies* window, *right click* on the new access policy then select *Edit*:**



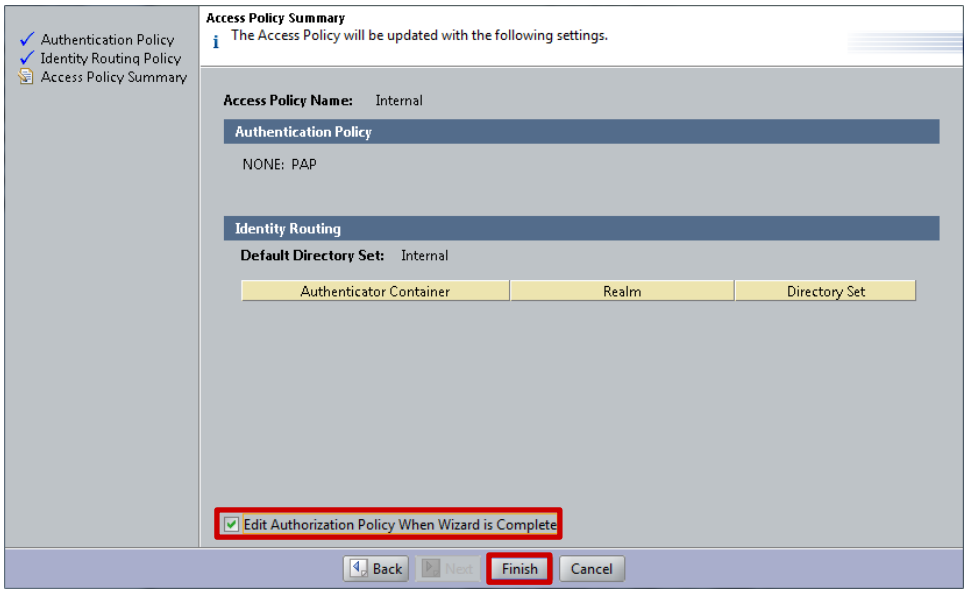

**4 In the *Authentication Policy* window check *NONE/PAP* to enable PAP protocol support then click *Next*:**



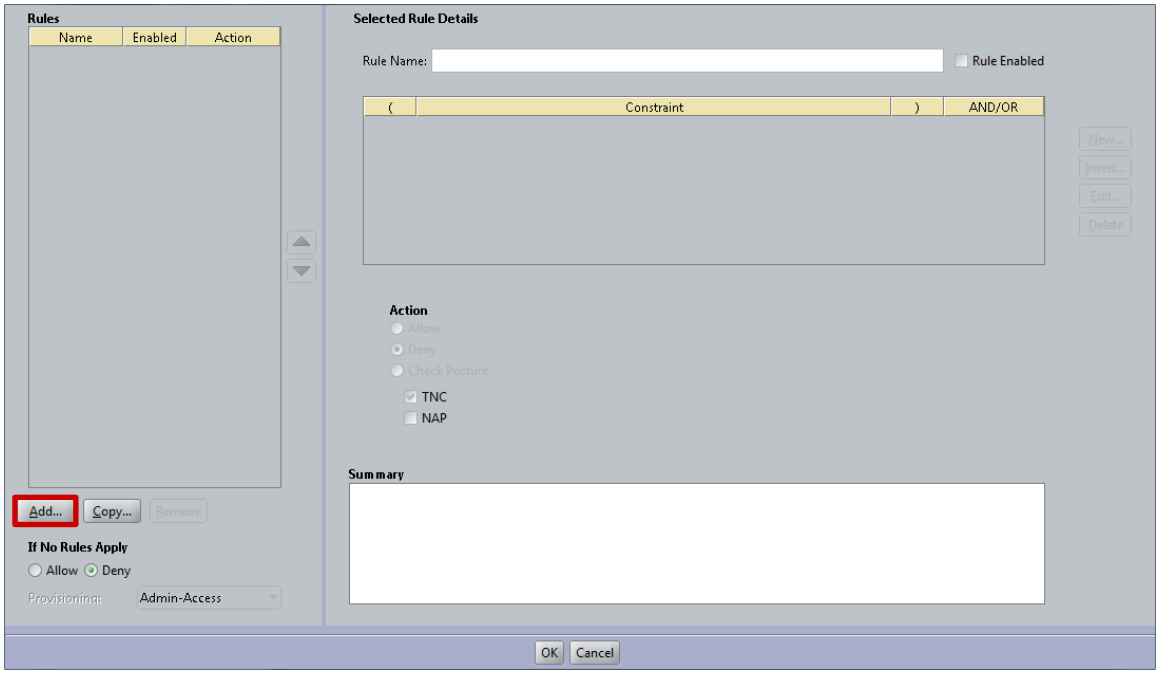
**5 In the *Identity Routing Policy* window check the option *Enable Default Directory*. Set the *Under Directory Set* value to *Internal* then click *Next*:**



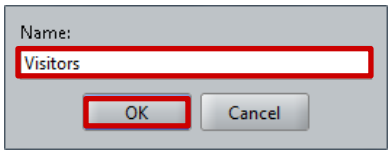

**6 The *Access Policy Summary* window will be displayed. Check the option *Edit Authorization Policy When Wizard is Complete* then click *Finish*:**



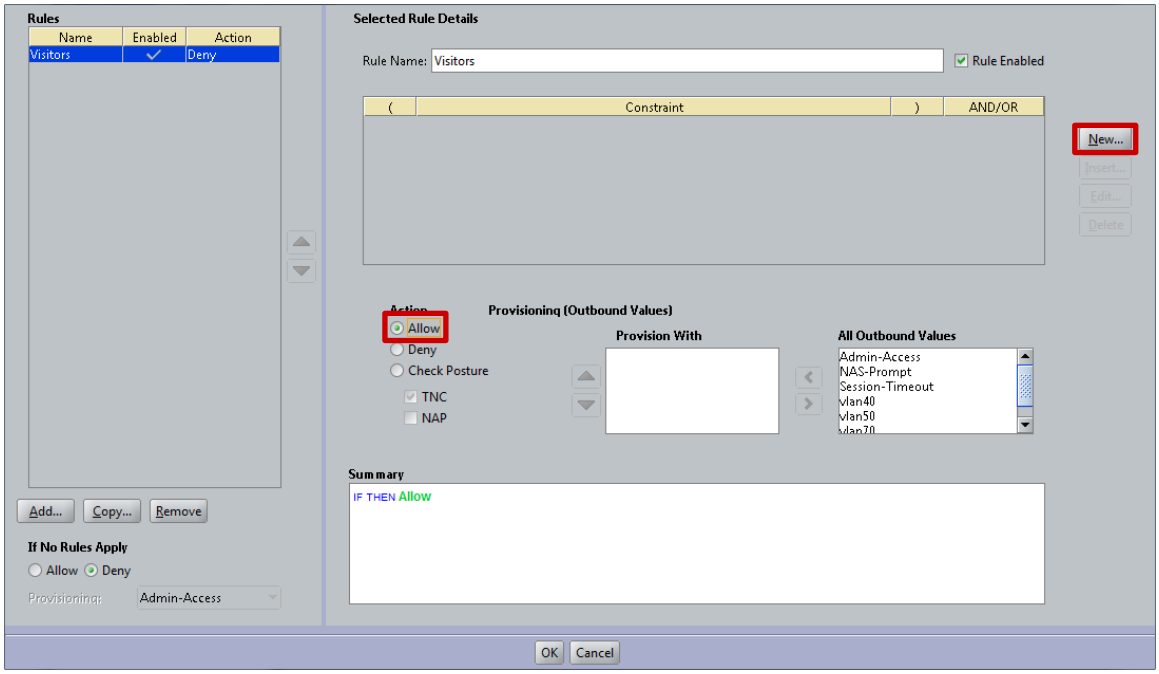
## 7 In the *Edit Authorization Policy* window click *Add*:




## 8 Set the *Name* to *Visitors* then click *OK*:

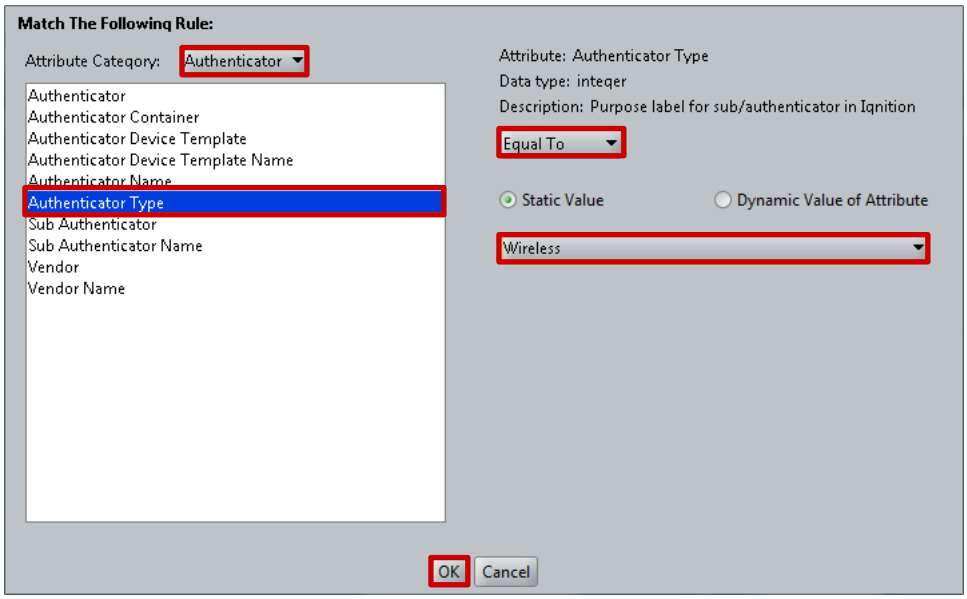


**9 Set the *Action* to *Allow* then click *New*:**



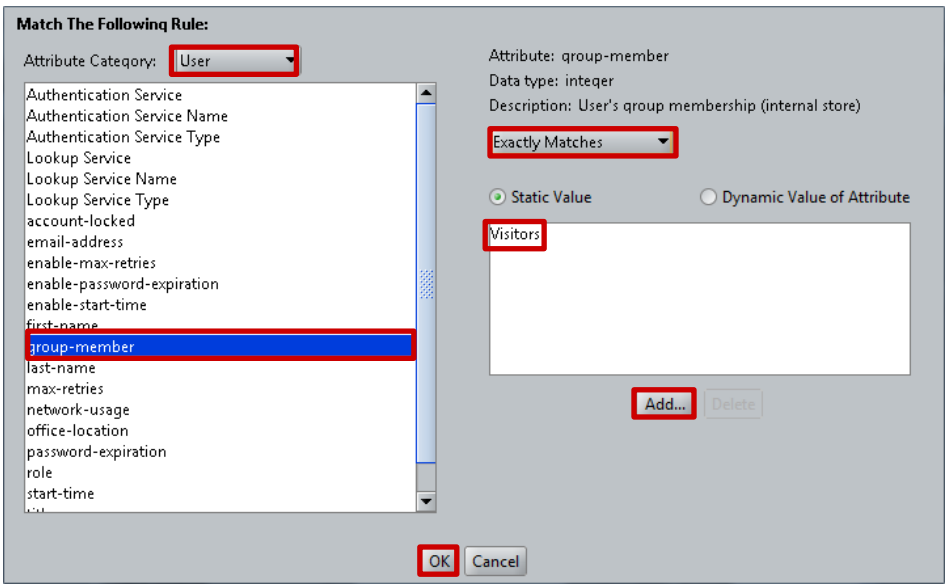

**10 In the *Constraint Details* window set the *Attribute Category* to *Authenticator*. Select the attribute named *Authenticator Type* then set the value to *Wireless*. Click *OK*.**

**This will create an authorization rule that permits access if the authentication request originates from a *Wireless* device:**



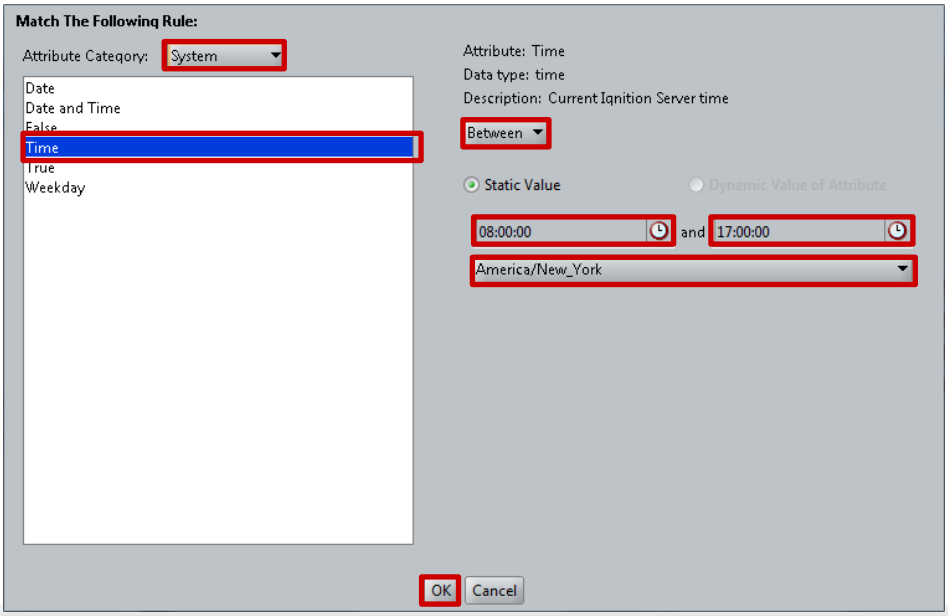
**11** **Click *New* to create an additional rule. In the *Constraint Details* window set the *Attribute Category* to *User*. Select the attribute named *group-member* then set the match condition to *Exactly Matches*. Click *Add* then select the group named *Visitors*. Click *OK*:**

**This will create an authorization rule that permits access if the authenticating user is a member of the *Visitors* group:**



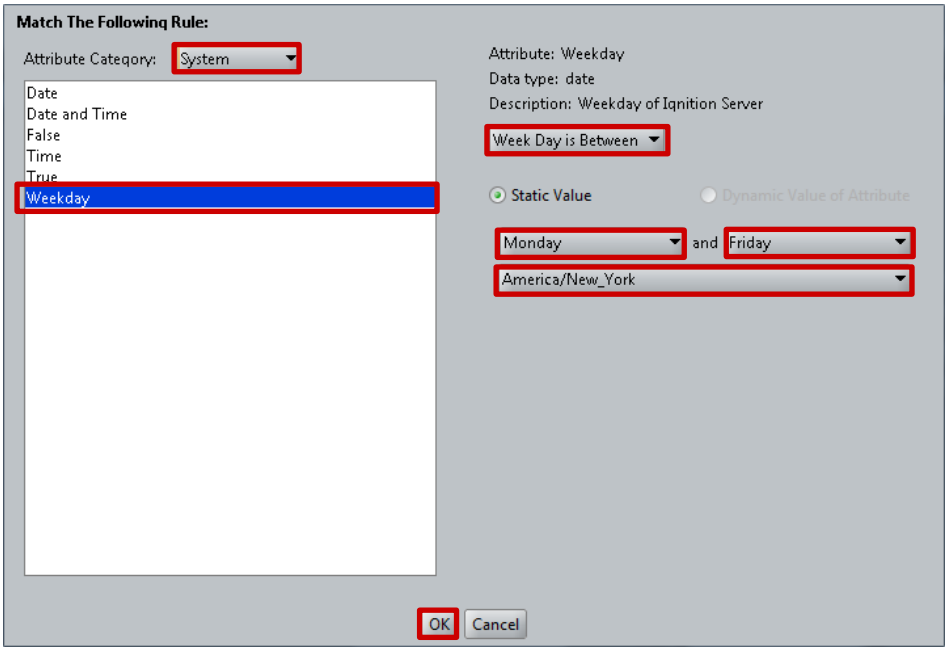

**12** **Click *New* to create an additional rule. In the *Constraint Details* window set the *Attribute Category* to *System*. Select the attribute named *Time* then set the match condition to *Between*. Select the start time value *08:00:00* and the end time value *17:00:00*. Set the appropriate timezone then click *OK*.**

**This will create an authorization rule that permits access if the authentication request is received between 08:00AM → 05:00PM:**

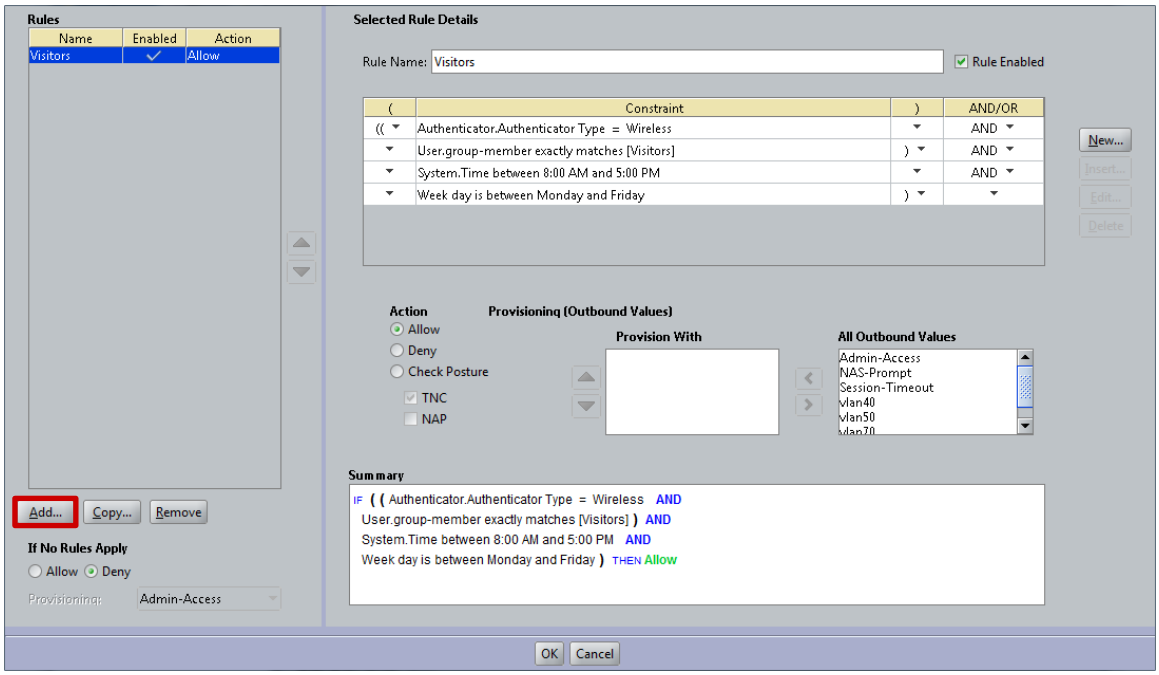


**13** **Click *New* to create an additional rule. In the *Constraint Details* window set the *Attribute Category* to *System*. Select the attribute named *Weekday* then set the match condition to *Week Day is Between*. Select the start time day *Monday* and the end day *Friday*. Set the appropriate timezone then click *OK*.**

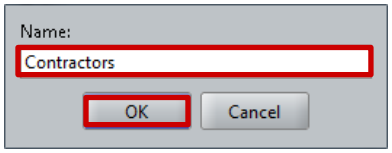
**This will create an authorization rule that permits access if the authentication request is received on Monday → Friday:**



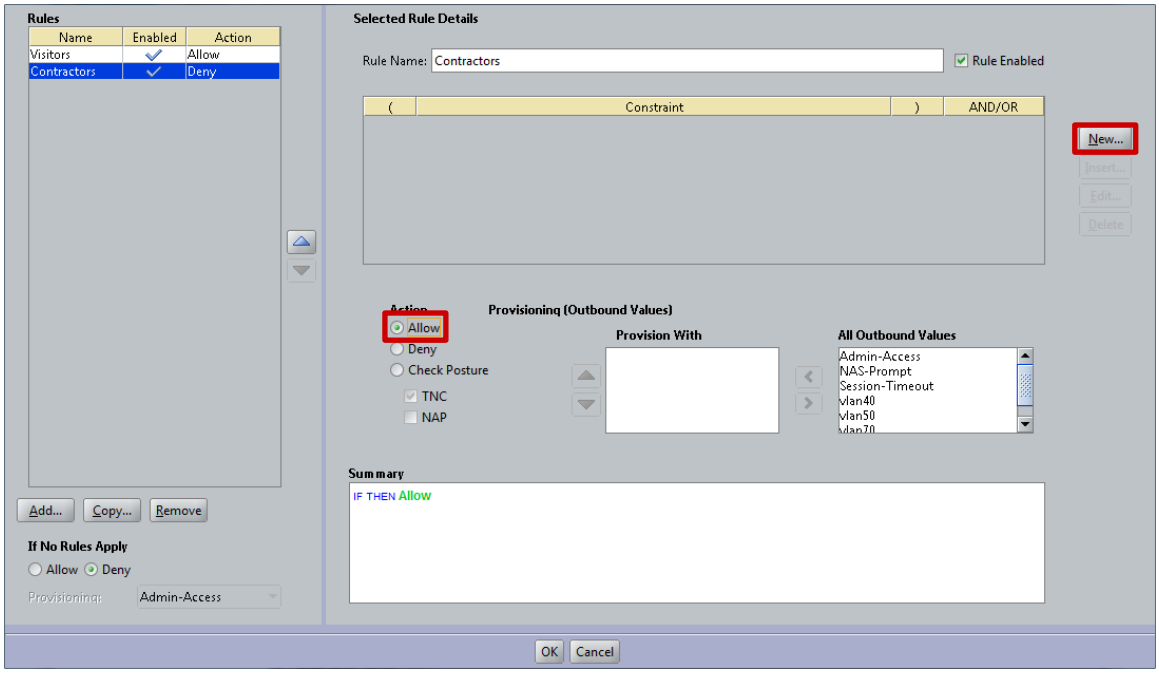

**14** **In the *Edit Authorization Policy* window click *Add* to create a new *Authorization Policy*:**



## 15 Set the *Name* to *Contractors* then click *OK*:

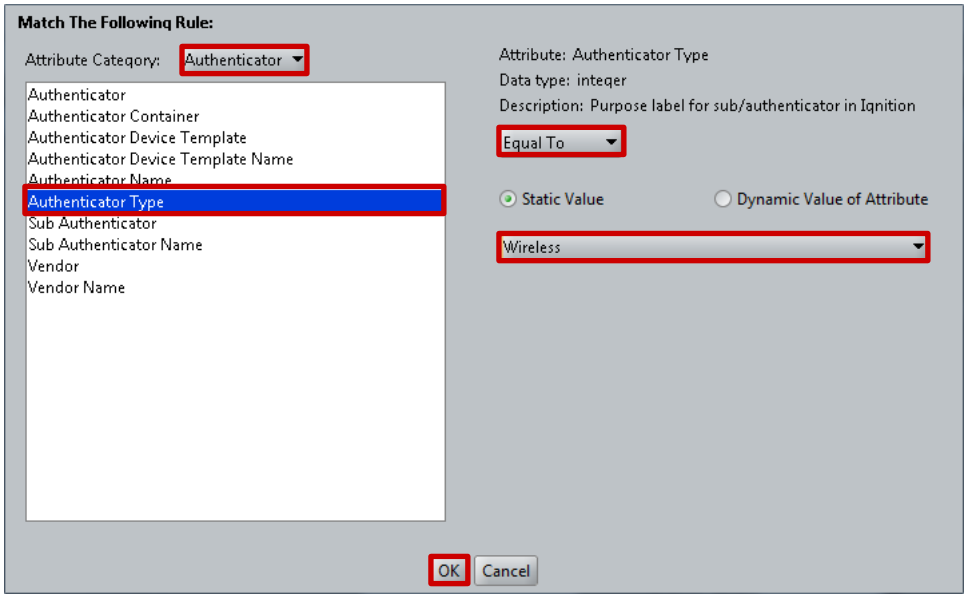



## 16 Set the *Action* to *Allow* then click *New*:



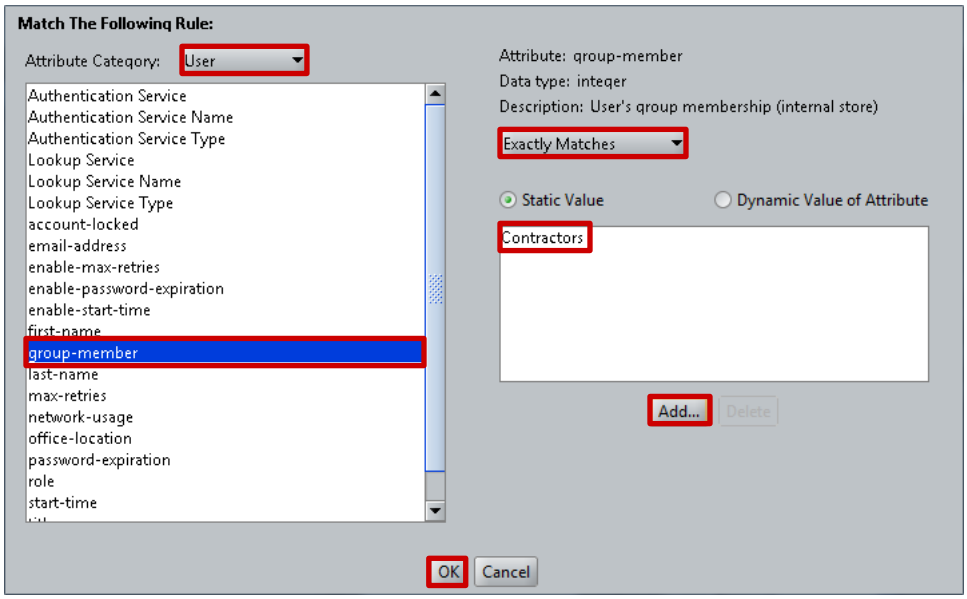
**17 In the *Constraint Details* window set the *Attribute Category* to *Authenticator*. Select the attribute named *Authenticator Type* then set the value to *Wireless*. Click *OK*.**

**This will create an authorization rule that permits access if the authentication request originates from a *Wireless* device:**

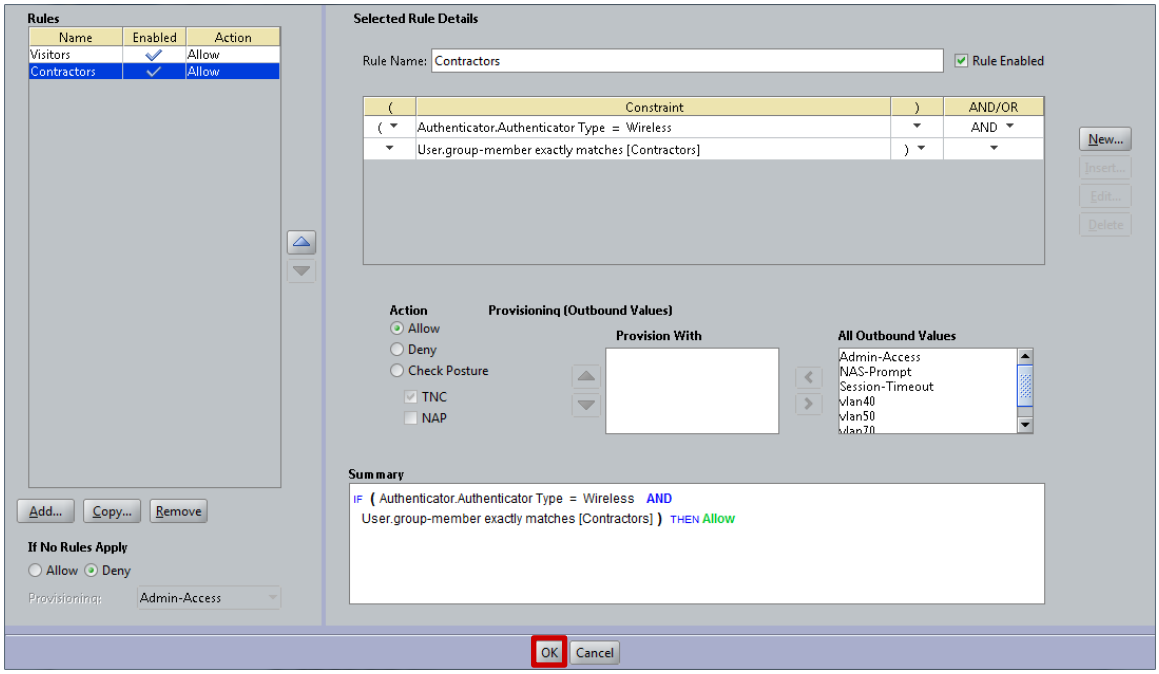



**18 Click *New* to create an additional rule. In the *Constraint Details* window set the *Attribute Category* to *User*. Select the attribute named *group-member* then set the match condition to *Exactly Matches*. Click *Add* then select the group named *Contractors*. Click *OK*:**

**This will create an authorization rule that permits access if the authenticating user is a member of the *Contractors* group:**



**19 Click *OK*:**




**20 The Ignition Server will now have an authorization policy that supports PAP authentication using the Internal Store with the following authorization rules:**

# Access Policy: Internal

## Authentication Policy

The following protocols are active:

| Outer Protocol | Inner Protocol |
|---|---|
| NONE | PAP |

## Certificate

ide.avayalabs.local

## Identity Routing

Default Directory Set Internal

## Authorization Policy

| Rule Name | Rule Summary |
|---|---|
| Visitors | IF ( ( Authenticator.Authenticator Type = Wireless AND User.group-member exactly matches [Visitors] ) AND System.Time between 8:00 AM and 5:00 PM AND Week day is between Monday and Friday ) THEN Allow |
| Contractors | IF ( Authenticator.Authenticator Type = Wireless AND User.group-member exactly matches [Contractors] ) THEN Allow |

If No Rules Apply: Deny

## 2.1.6 Authenticators

Each network infrastructure device that uses the Ignition Server as a RADIUS server must be defined as an authenticator (i.e. RADIUS client). Each entry can be defined to support a single device (host IP address) or a group of devices (IP subnet & mask) and must include a RADIUS shared secret. In addition an access policy must also be assigned so that the Ignition Server knows how to process authentication requests originating from the device.

The authenticator entry also defines the device vendor and type which determines the RADIUS check and return attributes supported by the device.

### 2.1.6.1 Configuration Steps

For this configuration step an authenticator will be defined for the WC 8180 Wireless Controller with the following parameters defined:

1) The ***Name*** set to ***wc8180-1.avayalabs.local*** which is the hostname assigned to the WC 8180.
2) The ***IP Address*** set to ***192.168.10.30*** which is the host IP address assigned to the WC 8180.
3) The ***RADIUS Shared Secret*** set to ***avayalabs*** which matches the RADIUS shared secret assigned to the WC 8180.
4) The ***Access Policy*** is mapped to the Access Policy named ***Internal*** created in section 2.1.5.

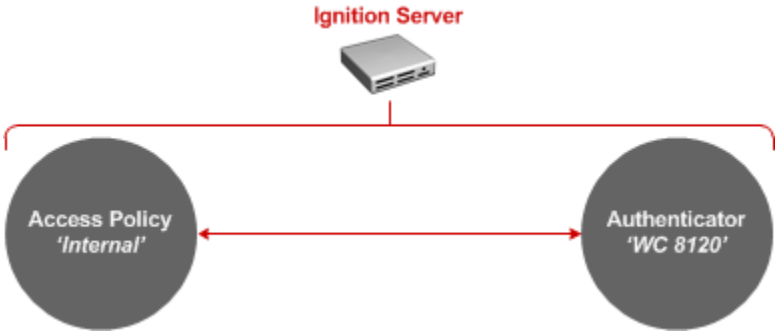
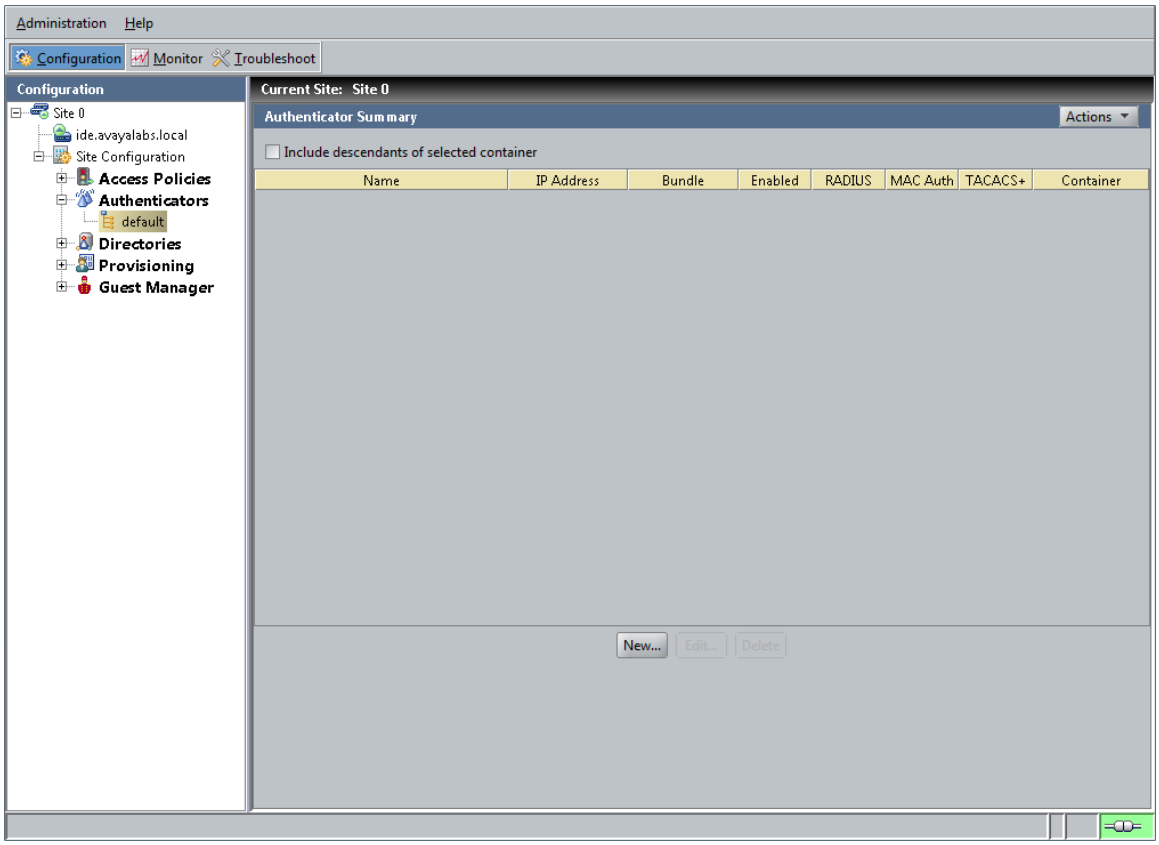
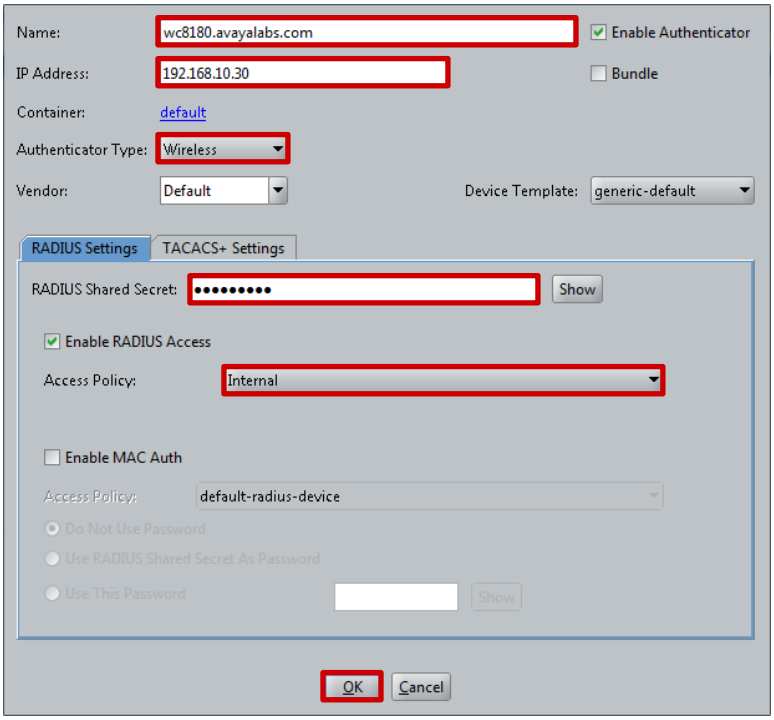



**Figure 2.1.6.1 – Access Policy**

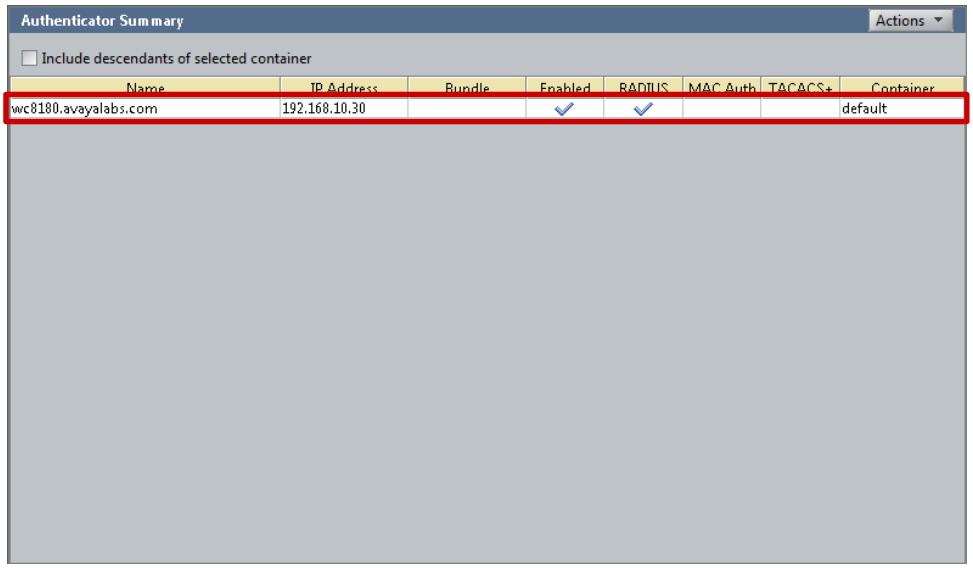
**1 Within the *Ignition Dashboard* select *Configuration > Site Configuration > Authenticators > Default*. *Right click* on *Default* then select *New*:**



**2 Enter the Name and IP Address of the WC8180 Wireless Controller then set the *Authenticator Type* to *Wireless*. Set the *RADIUS Shared Secret* to *avayalabs* then select the *Access Policy* named *Internal*. Click *OK*:**




**3 The WC8180 has now been added as an authenticator and can now forward RADIUS access requests to the Ignition Server which will be authenticated against the Internal Store:**



## 2.1.7 Guest Manager

The Ignition Guest Manager Server provides a HTTP/HTTPS portal interface that allows provisioning users (sponsors) to provision temporary accounts for guest users. The Ignition Guest Manager communicates with the Ignition Server using SOAP over HTTPS.

The Guest Manager Server uses RADIUS to authenticate sponsor user's accounts against the Ignition Server. The provisioning account can be stored locally on the Ignition Server or centrally in LDAP or Active Directory user store.

Each provisioner user account maps to one or more provisioning groups that defines the guest user template and options each provisioner can create.

### 2.1.7.1 SOAP Service

Guest user and internal provisioner accounts are created by the Ignition Guest Manager on the Ignition Server over a SOAP interface. All communications over the SOAP interface are secured using TLS. For the Ignition Guest Manager Server to communicate with the Ignition Server the SOAP interface must be enabled on the Ignition Server and a SOAP username & password defined.

#### 2.1.7.1.1 Configuration Steps

For this configuration step the SOAP service will be enabled on the Ignition Server with the following parameters defined:

1) The ***SOAP Username*** set to ***soapuser***.
2) The ***SOAP Password*** set to ***avayalabs***.
3) The ***SOAP Service*** set to ***Enabled***.
4) The ***Bound interface*** will be set to the ***Admin Port***.

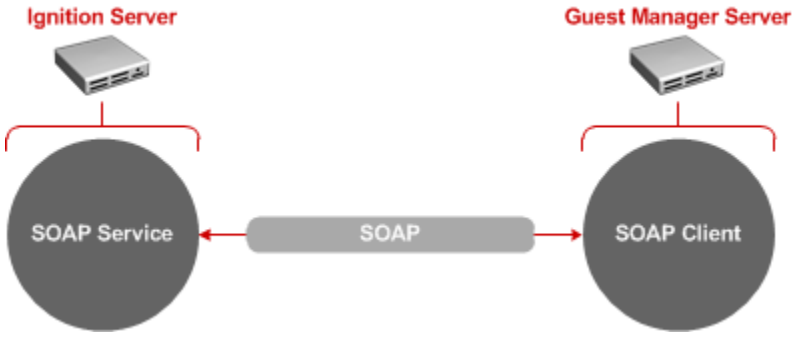
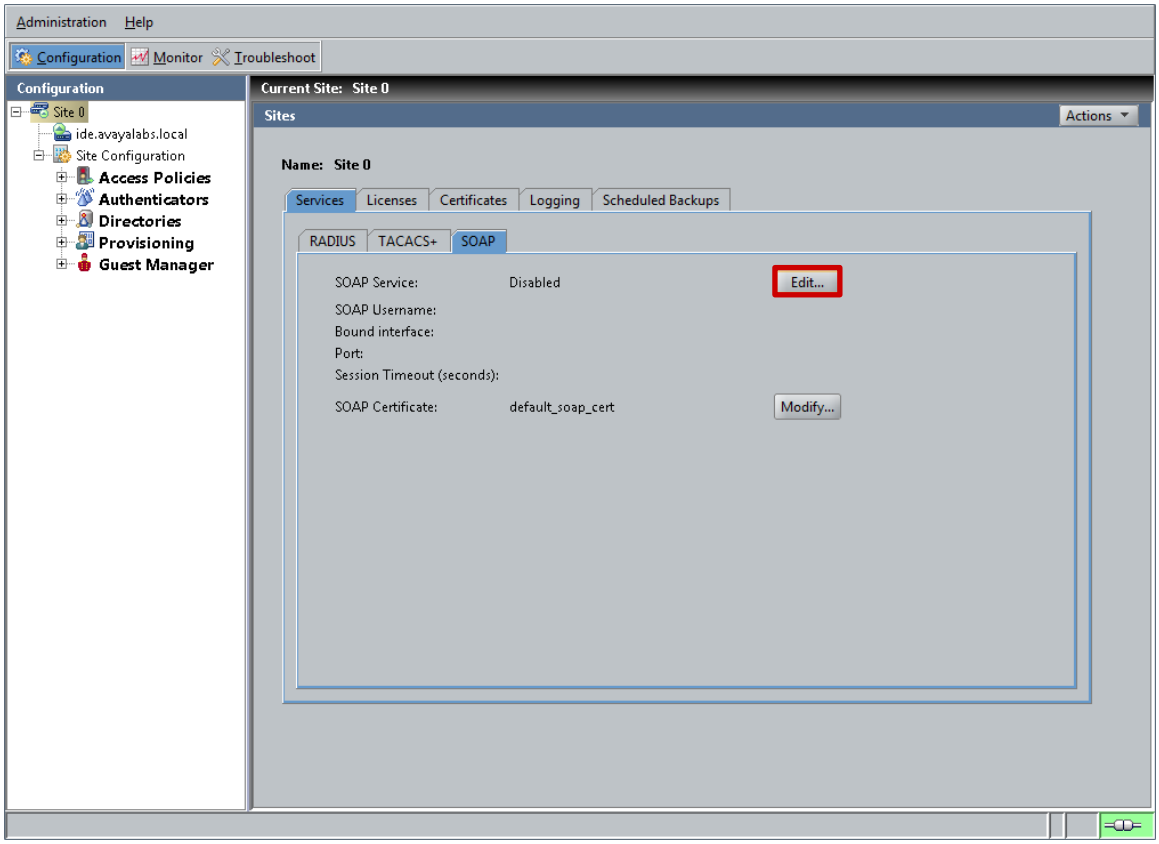
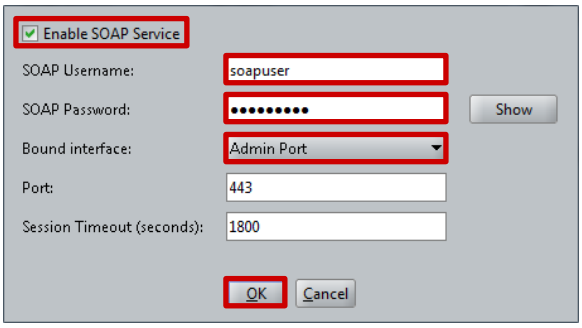



**Figure 2.1.7.1.1 – SOAP Service**

**1 Within the *Ignition Dashboard* select *Configuration* > *Site-Name* > *Services* > *SOAP*. Click *Edit:***




**2 Check the option *Enable SOAP Service*. Set the *SOAP Username* to *soapuser* and the *SOAP Password* to *avayalabs*. Select the *Bound interface* named *Admin Port* then click *OK*:**



### 2.1.7.2 Internal Provisioners

Internal provisioners authenticate to the Ignition Server using RADIUS and there accounts are stored locally on the Ignition Server. When an internal provisioner attempts to access the Ignition Guest Manager, the Ignition Guest Manager verifies the provisioner's credentials on the ignition server using RADIUS.

Each internal provisioner can be assigned to one or more provisioning groups which in-turn assigns guest users to an internal group on the Ignition Server. When the internal provisioner account is created on the Ignition server, the internal account includes the provisioning group names that the provisioners account has been assigned.

#### 2.1.7.2.1 Configuration Steps

For this configuration step a Guest Manager Server Entry will be created for the Guest Manager server with the following parameters defined:

1) The ***Name*** set to ***w3kserver-guest.avayalabs.local*** which is the hostname assigned to the Ignition Guest Manager server.
2) The ***IP Address*** set to ***192.168.10.55*** which is the host IP address assigned to the Ignition Guest Manager server.
3) The ***RADIUS Shared Secret*** set to ***avayalabs*** which matches the RADIUS shared secret defined on the Ignition Guest Manager server.
4) The Provisioner Access Policy set to ***Internal Provisioners Only*** which authenticates provisioner accounts locally on the Ignition Server.

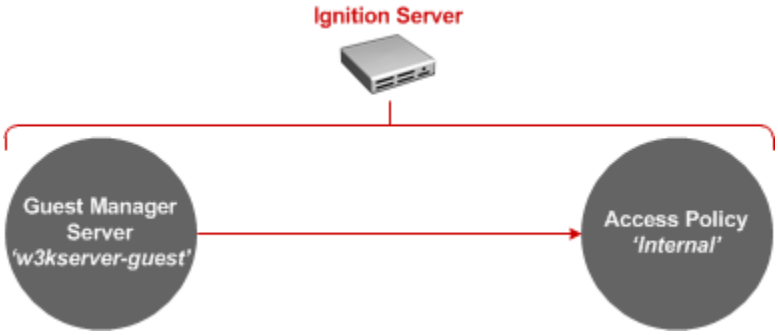
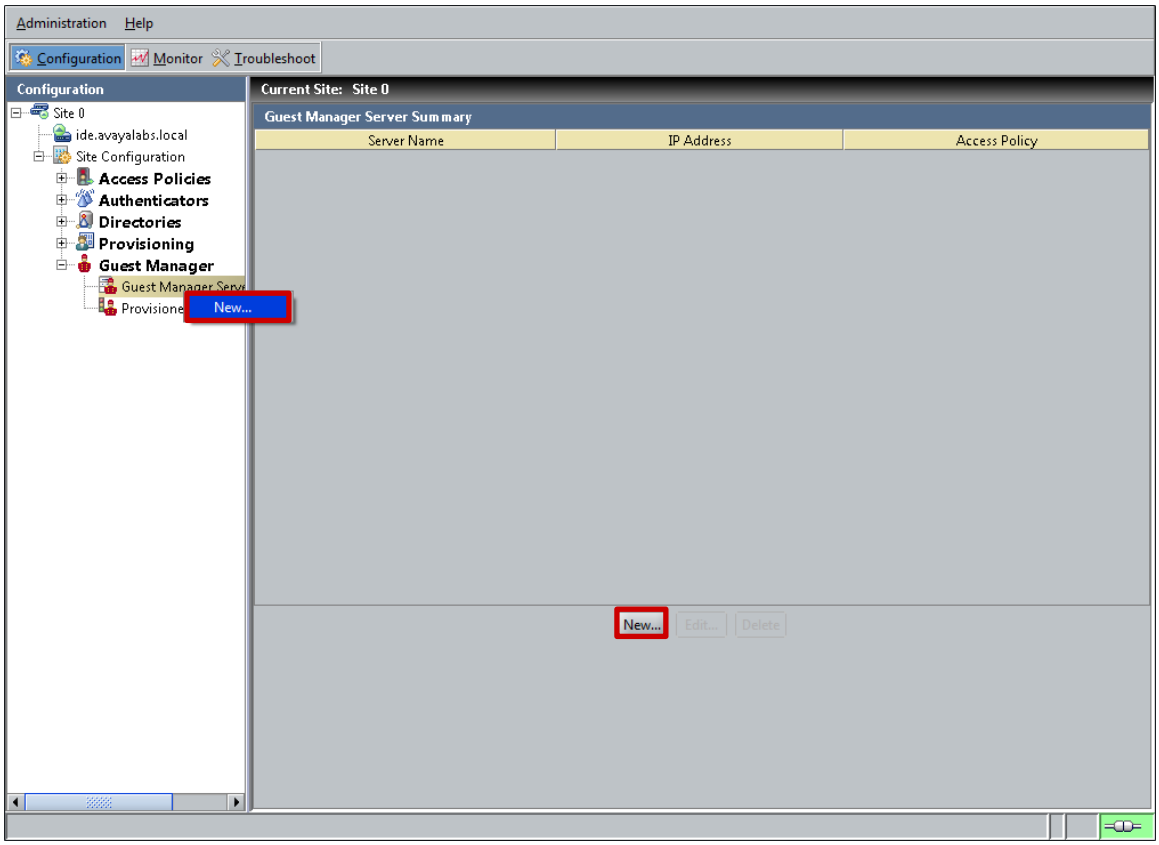
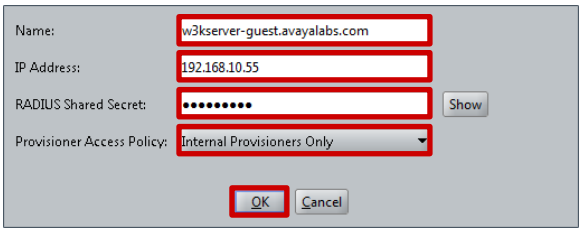



**Figure 2.1.7.2.1 – Guest Manager Server**

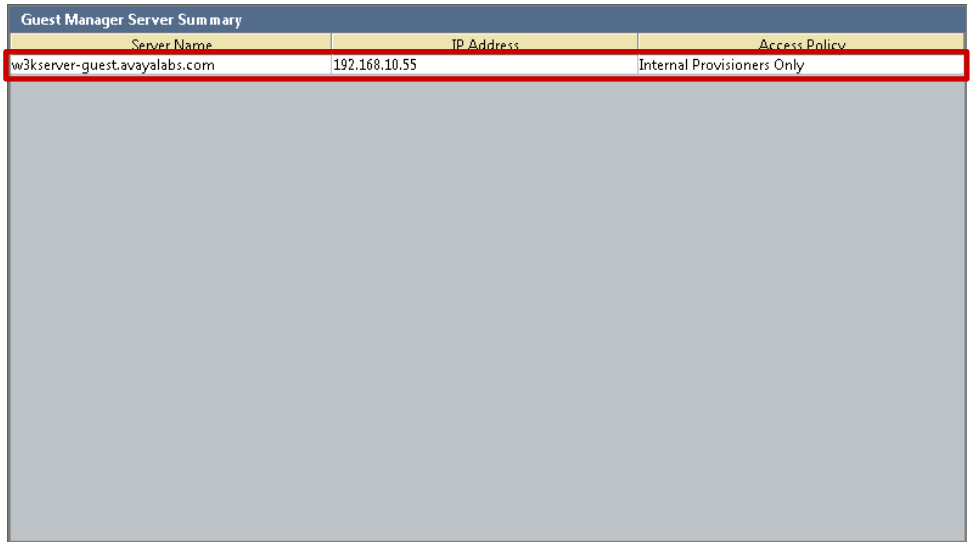
**1 Within the *Ignition Dashboard* select *Configuration > Site Configuration > Guest Manager > Guest Manager Servers*. *Right click* on *Guest Manager Servers* then select *New*:**




**2 Enter the *Name* and *IP Address* for your Ignition Guest Manager server then set the *RADIUS Shared Secret* to *avayalabs*. Set the *Provisioner Access Policy* to *Internal Provisioners Only* then click *OK*:**



**3 A *Guest Manager Server* entry to support internal provisioners has now been created:**



Guest Manager Server Summary

| Server Name | IP Address | Access Policy |
|---|---|---|
| w3kserver-guest.avayalabs.com | 192.168.10.55 | Internal Provisioners Only |

## 2.1.7.3 External Provisioners (Optional)

External provisioners authenticate to the Ignition Server using RADIUS and there accounts are stored on an external user directory such as Active Directory or LDAP. When an external provisioner attempts to access the Ignition Guest Manager, the Ignition Guest Manager verifies the credentials on the Ignition Server using RADIUS which is verified against the external user directory.

Each external provisioner can be assigned to one or more provisioning groups which in-turn assigns guest users to an internal group on the Ignition Server. External provisioners are mapped to provisioning groups using provisioning access policies and virtual groups defined on the Ignition Server.

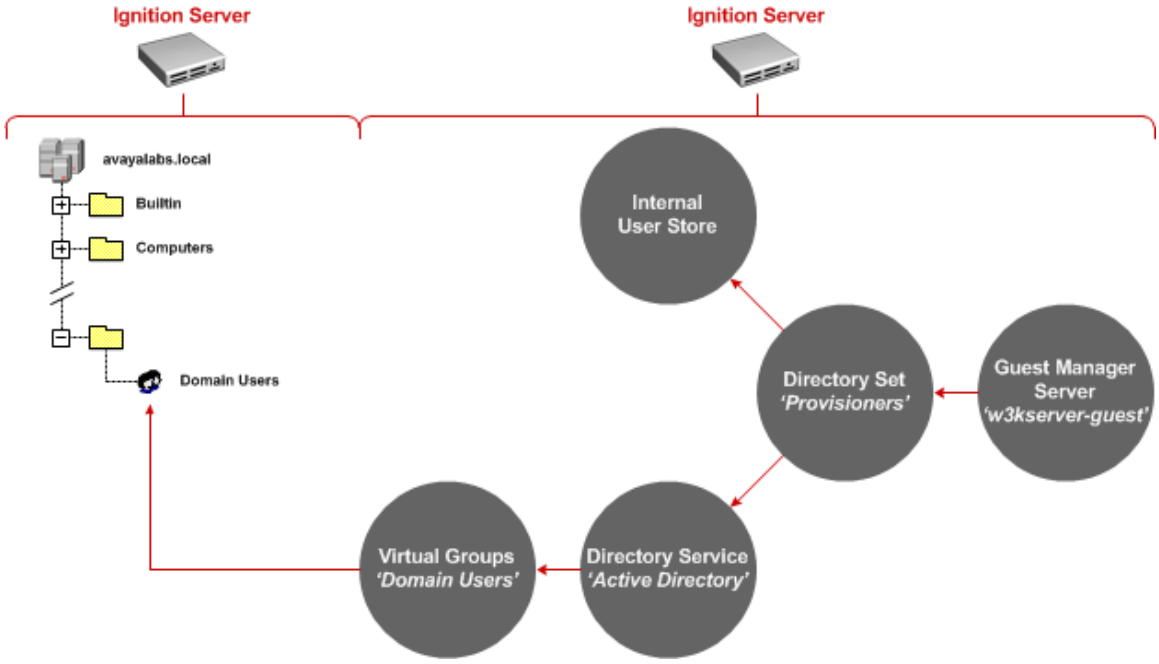



**Figure 2.1.7.3 – External Provisioners**

### 2.1.7.3.1 Directory Services

When external provisioning accounts are required, the directory store where provisioning user the accounts are located needs to be defined as a directory service on the on the Ignition Server. The directory service is then tied to a directory set so that the Ignition Server knows where to locate the provisioning users when they attempt to authenticate to the Ignition Guest Manager server.

#### 2.1.7.3.1.1 Configuration Steps

For this configuration step a Microsoft Windows Server 2003 Domain Controller will be added to the Directory Services on the Ignition Server with the following parameters defined:

1) The ***Name*** will be set to ***Active Directory*** to match the directory type.
2) The ***Service Account Name*** will be set to ***ide*** which is a user account for the Ignition Server defined in Active Directory.
3) The ***Service Account Password*** will be set to ***avayalabs*** which matches password for the ide user account predefined in Active Directory.
4) The ***NetBIOS Domain*** will be set to ***AVAYALABS*** which matches the NetBIOS domain name for the Active Directory Domain.

5) The ***AD Domain Name*** will be set to ***avayalabs.local*** which matches the Active Directory Domain name.

6) The ***Directory Root DN*** will be set to the default value ***DC=avayalabs,DC=local***.

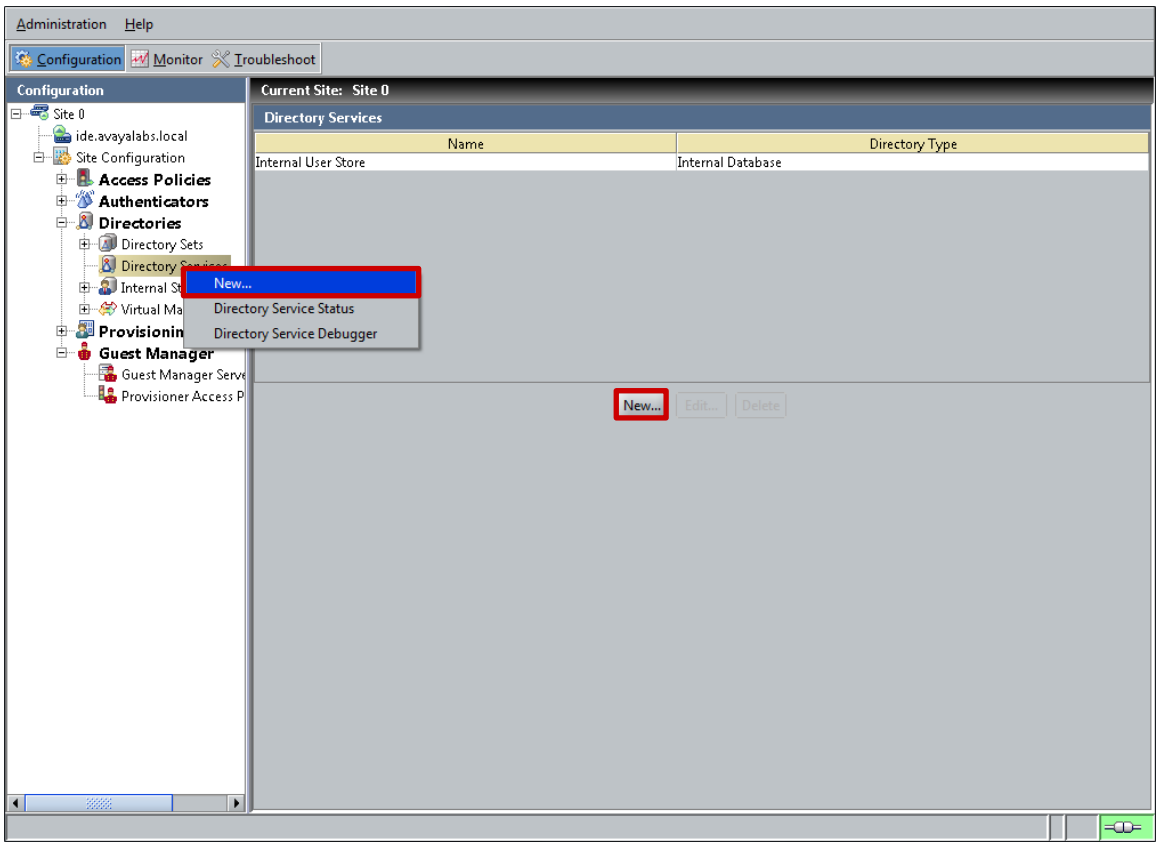
7) The ***User Root DN*** will be set to the default value ***DC=avayalabs,DC=local***.

8) The ***Primary Server IP Address*** will be set to ***192.168.10.50*** which is the host IP address assigned to Microsoft Windows Server 2003 Domain Controller.

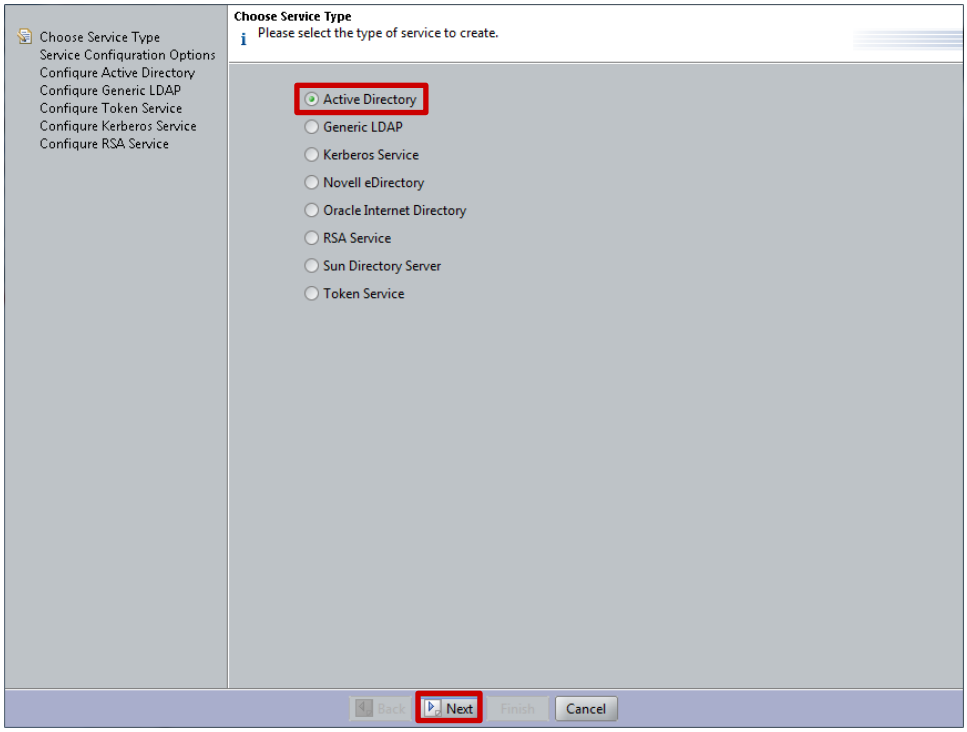
9) The ***Port*** will be set to the default value ***389***.

10) The ***NETBIOS Server Name*** will be set to ***W3KSERVER-DC1*** which matches the NetBIOS name assigned to the Microsoft Windows Server 2003 Domain Controller.

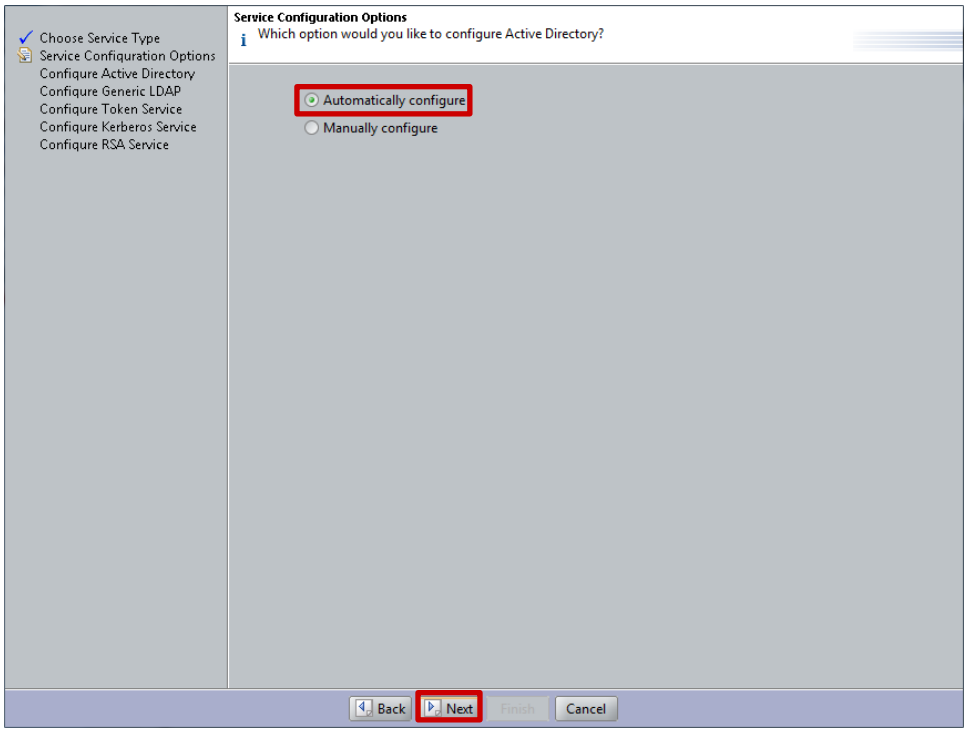
**1 Within the *Ignition Dashboard* select *Configuration* > *Directories* > *Directory Services*. *Right click* on *Directory Services* then select *New*:**



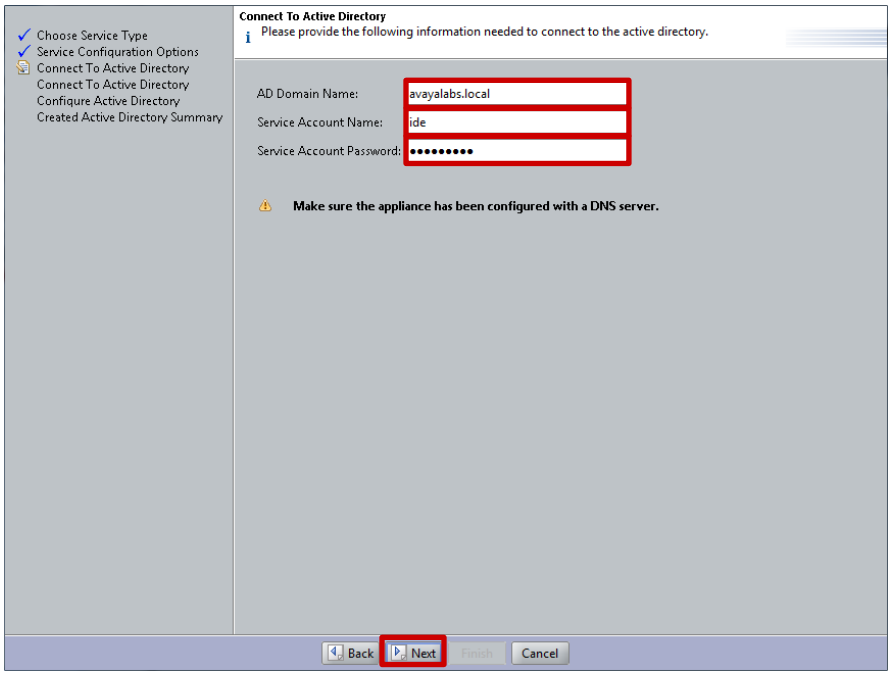
**2 In the *Choose Service Type* window select *Active Directory* then click *Next*:**




**3 In the *Service Configuration Options* window select *Automatically Configure* then click *Next*:**

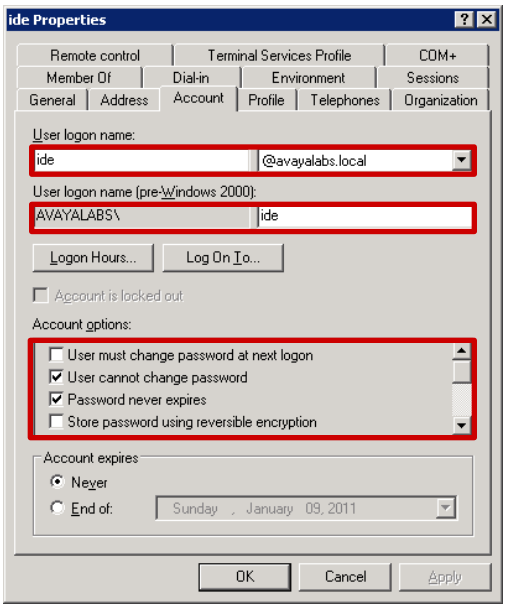


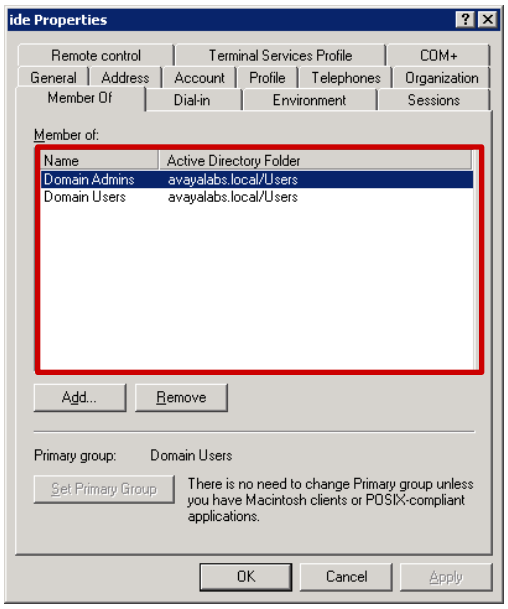
**4 In the *Connect To Active Directory* window enter the *AD Domain Name*, *Service Account Name* and *Password*. Click *Next*:**



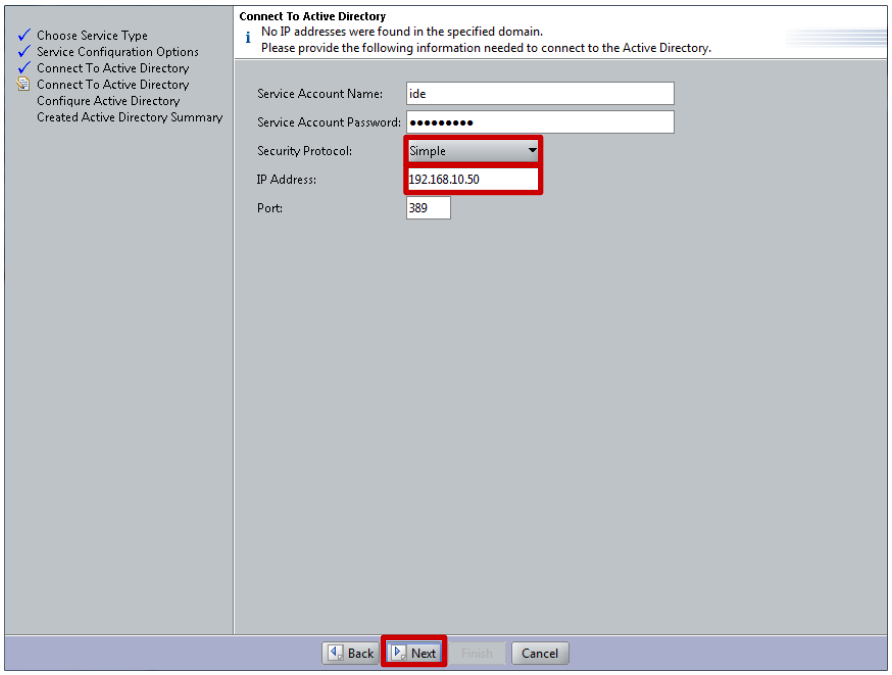

To communicate with Active Directory DNS must be enabled and configured on the Ignition Server.

In this example an Active Directory account called ***ide*** with the password ***avayalabs*** has been pre-defined in Active Directory and is a member of the ***Domain Users*** group. Account options have also been set to lock the account password so that it does not change.

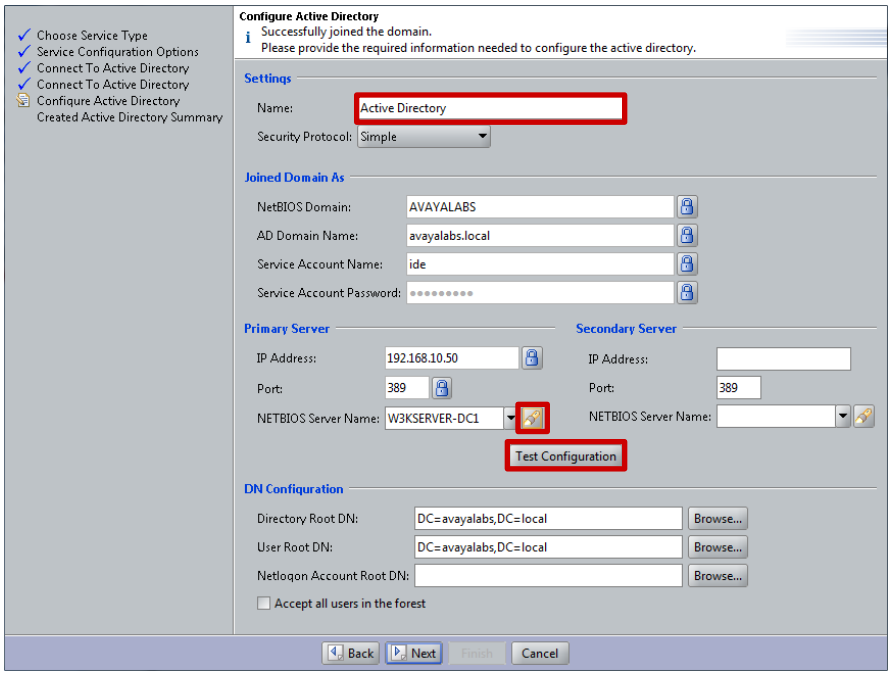


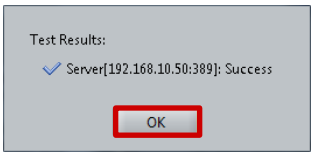
**5 In the *Connect to Active Directory* window select the *Security Protocols* type *Simple* then enter the *IP address* of the *Active Directory Domain Controller*. Click *Next*:**



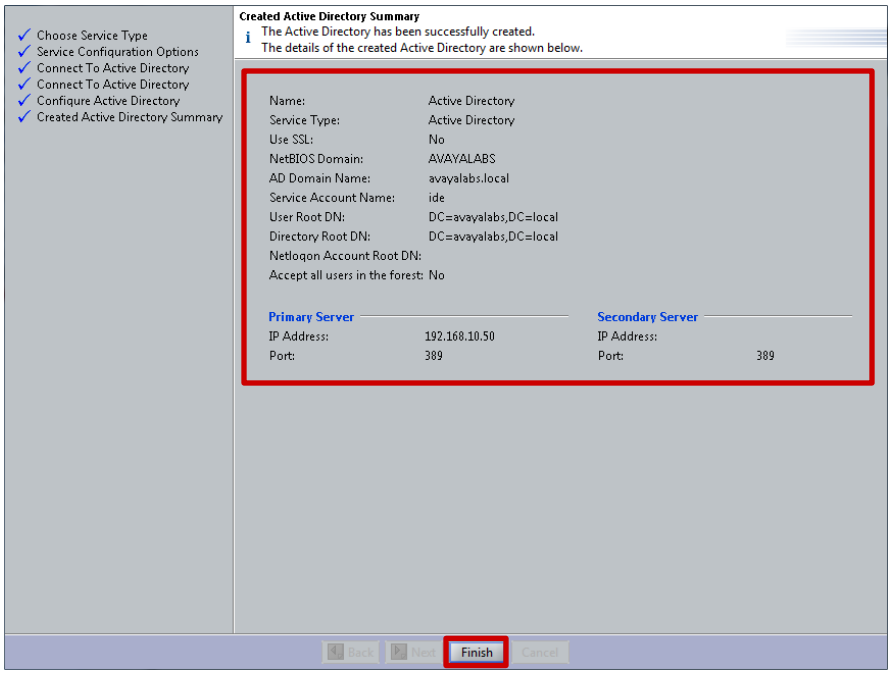

**6 In the *Configure Active Directory Window* set the *Name* to *Active Directory*. Click the icon next to the *NETBIOS Server Name* field to resolve the NETBIOS server name. Verify the Active Directory configuration by selecting *Test Configuration*:**



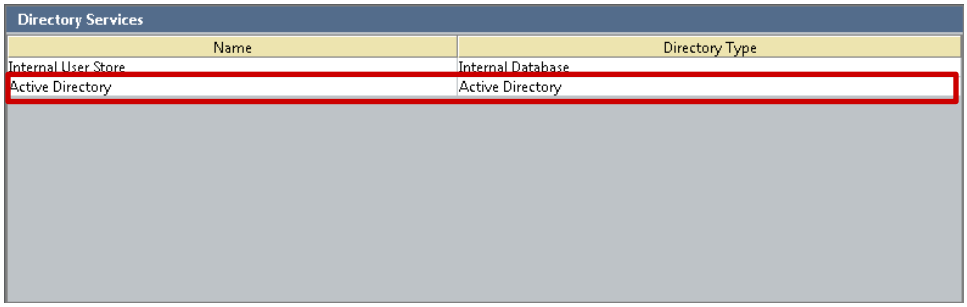
**7 If the Active Directory configuration is correct and the test successful, the following dialog message will be displayed. Click *OK* then *Next*:**




**8 A summary of the Active Directory configuration will be displayed. Click *Finish*:**




**9 An Active Directory service has now been added to the Ignition Server:**



### 2.1.7.3.2 Directory Sets

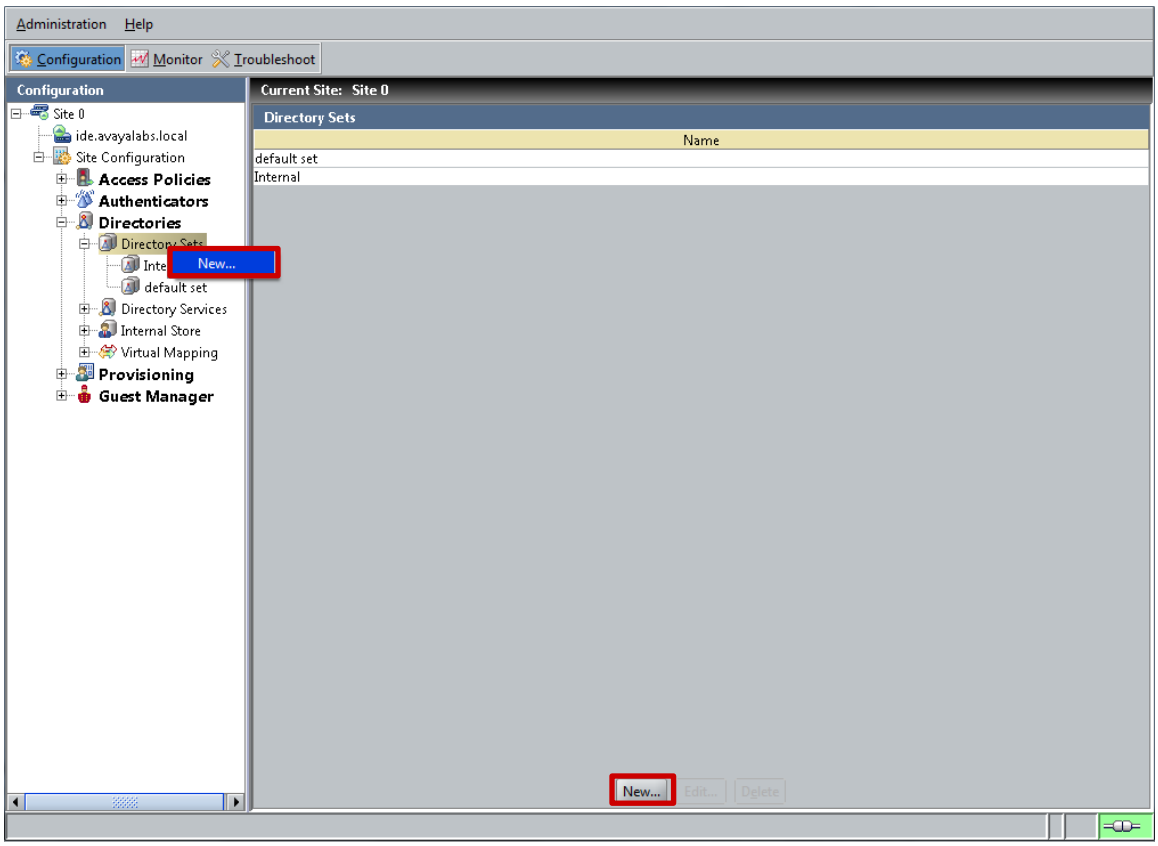
A directory set is required to tell the Ignition Server where to locate the provisioner user accounts and how to authenticate them. When a provisioning user attempts to authenticate, a RADIUS authentication request will be generated by the Ignition Guest Manager to the Ignition Server. The Ignition Server will use a provisioner access policy to determine which directory set to use to locate and authenticate the provisioning user accounts.

#### 2.1.7.3.2.1 Configuration Steps

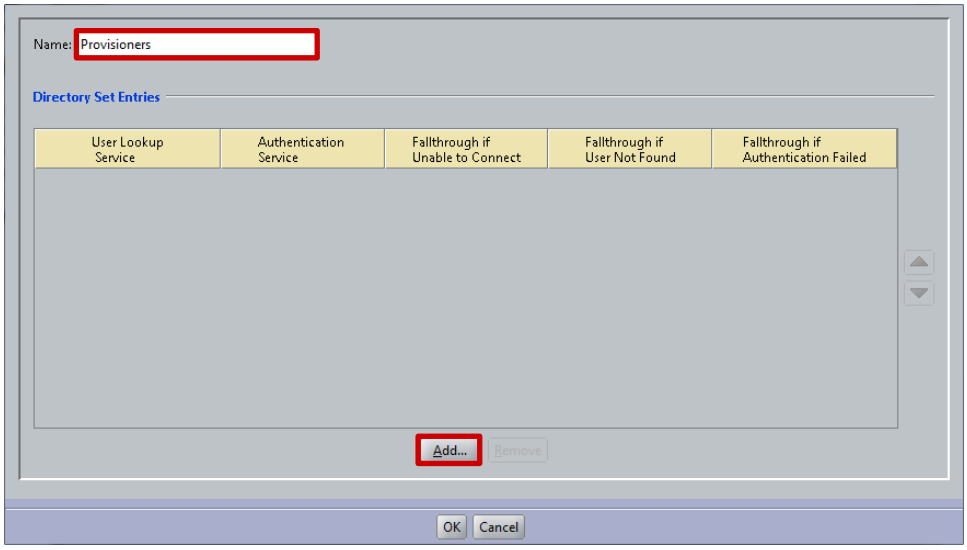
For this configuration step a Directory Set will be created with the following parameters defined:

1) The ***Name*** will be set to ***Provisioners*** to match the directory type.
2) A directory set for external provisioners will be defined that:
   a. Assigns the ***User Lookup Service*** to the directory service named ***Active Directory***.
   b. Assigns the ***Authentication Service*** to the directory service named ***Active Directory***.
3) A directory set for internal provisioners will be defined that:
   a. Assigns the ***User Lookup Service*** to the directory service named ***Internet User Store***.
   b. Assigns the ***Authentication Service*** to the directory service named ***Internet User Store***.

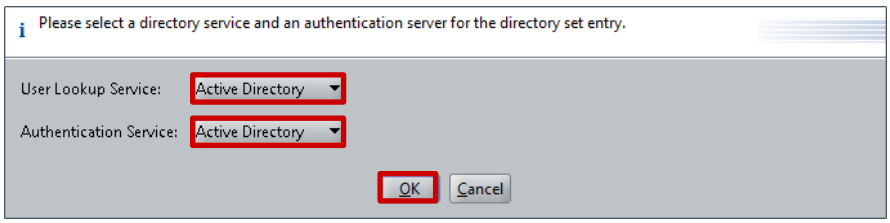
**1 Within the *Ignition Dashboard* select *Configuration > Site Configuration > Directories > Directory Sets*. *Right click* on *Directory Sets* then select *New*:**



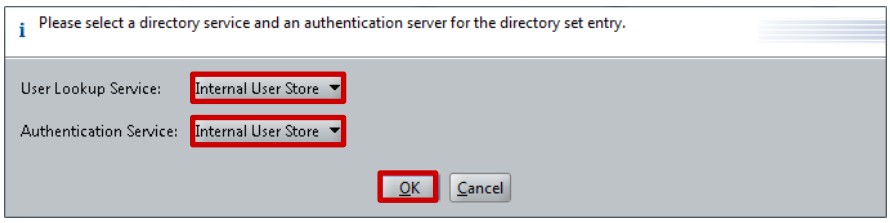
**2 In the *Directory Set* window enter the name *Provisioners* then click *Add*:**



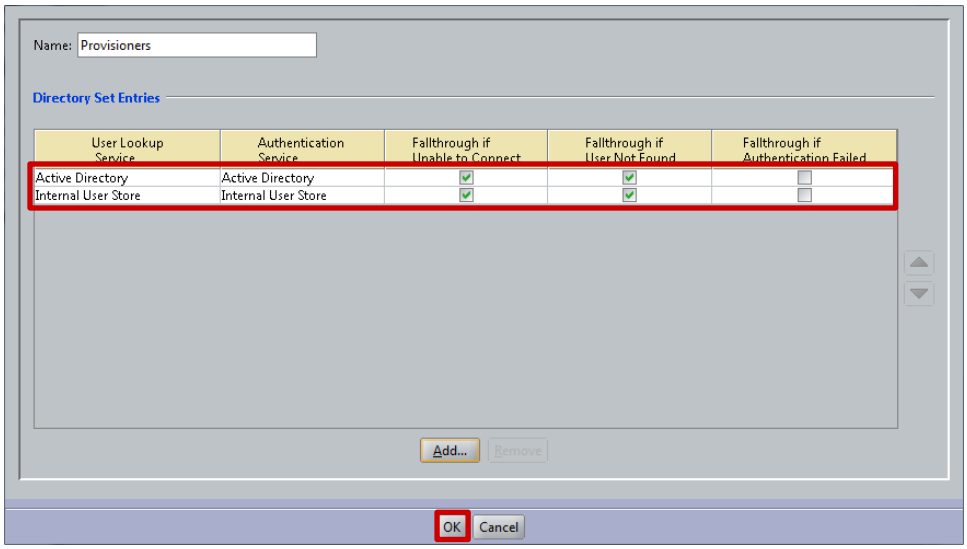

**3 In the *Directory Set Entry* window set the *Lookup Service* and *Authentication Services* to *Active Directory*. Click *OK*:**




**4 Click Add. In the *Directory Set Entry* window set the *Lookup Service* and *Authentication Services* to *Internal User Store*. Click *OK*:**



**5 A *Directory Set* named *Provisioners* with two directory service entries has now been created. Click *OK*:**




The previous example demonstrates how to create a directory set that supports both internal and external provisioners. If support for internal provisioners accounts is not required, the second directory set entry does not need to be defined.

### 2.1.7.3.3 Virtual Groups

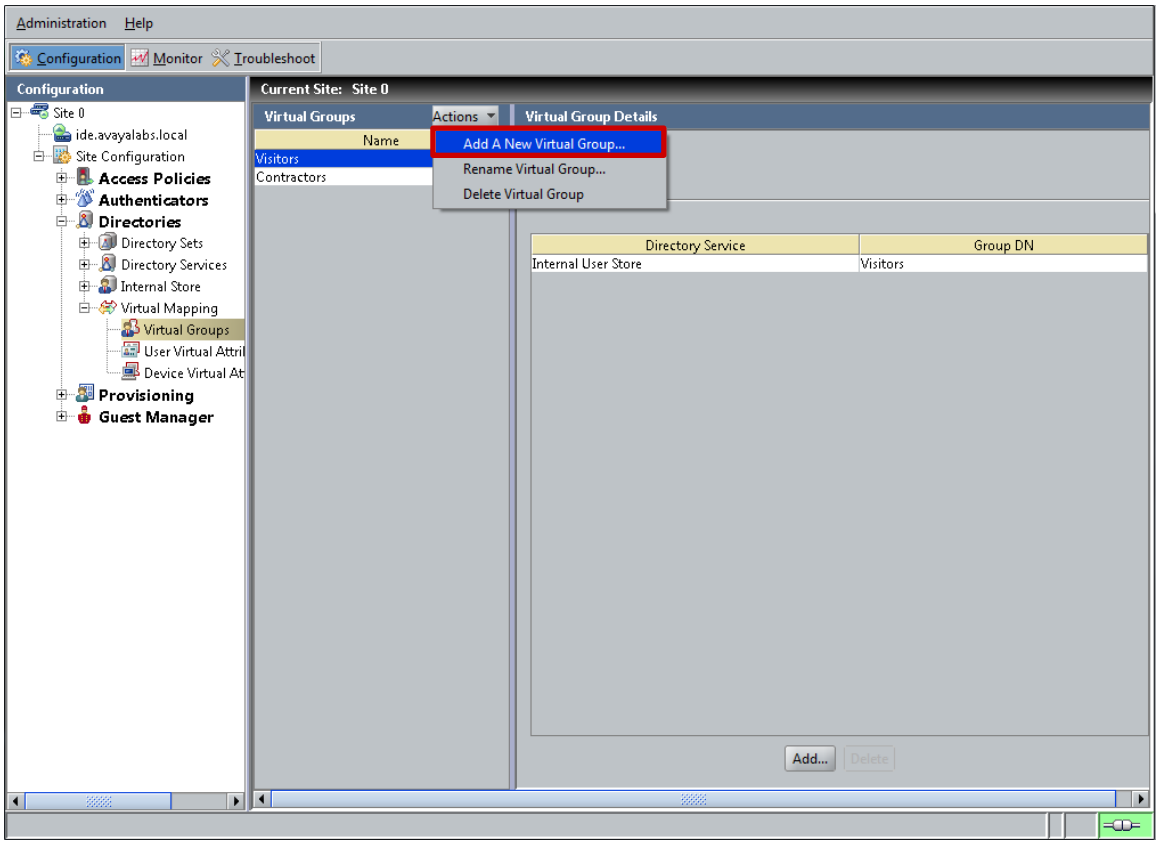
The provisioning templates available to each provisioner is determined using a provisioner access policy and is based on group membership. When external provisioning accounts are used, the Ignition Server has to be able to associate the external user to a group so that authorization can be performed and permissions applied.

Virtual groups provide a mechanism that allows the Ignition Server to map external groups stored in Active Directory or LDAP to a virtual group within the Ignition Server. An authorization policy can then reference the virtual group to determine if the user is authorized to access the system and then assign the appropriate template access.

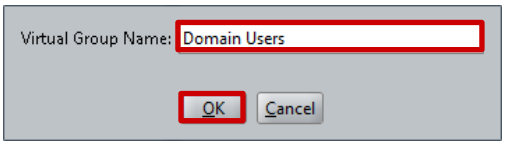
#### 2.1.7.3.3.1 Configuration Steps

For this configuration step a Virtual Group called ***Domain Users*** will be created that maps to the Active Directory group called ***Domain Users***. This will permit all Active Directory users to be able to access the Ignition Guest Manager Server and provision guest user accounts:

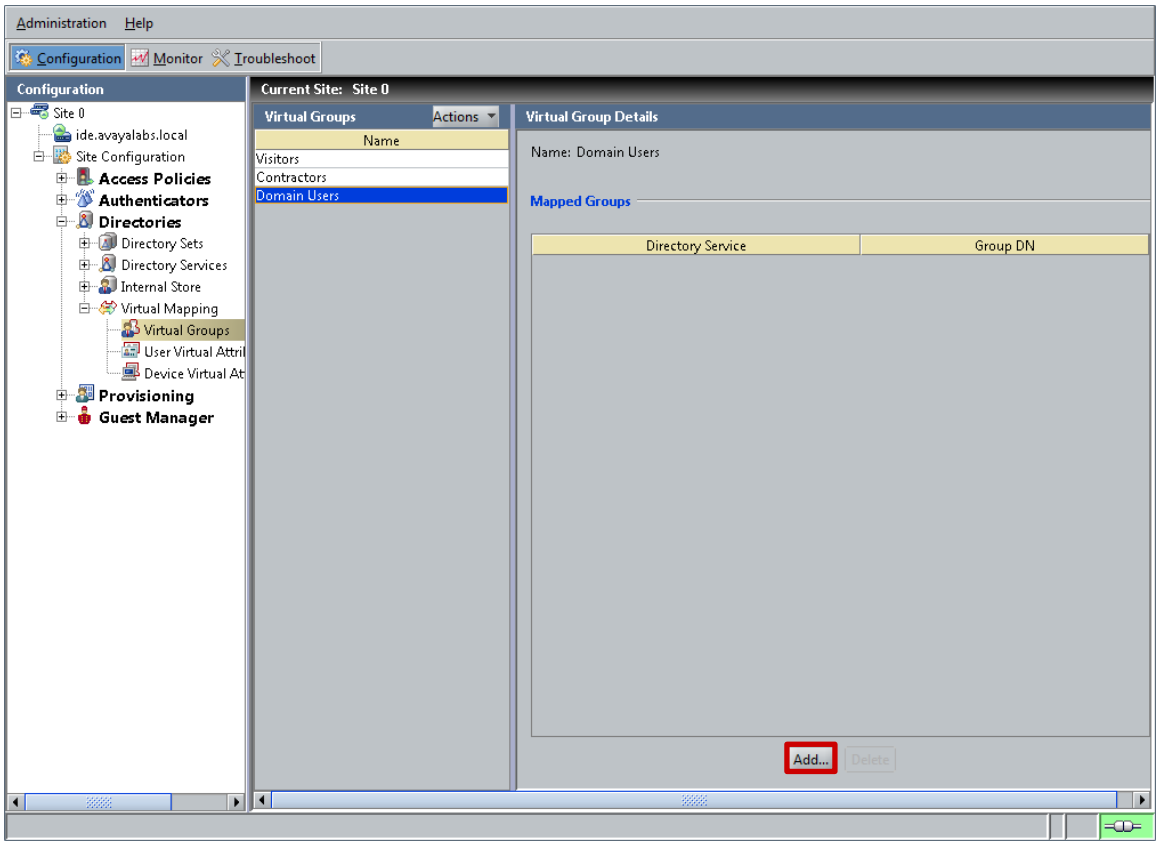
**1 Within the *Ignition Dashboard* select *Configuration* > *Site Configuration* > *Directories* > *Virtual Mapping* > *Virtual Groups*. Select *Actions* > *Add A New Virtual Group*:**



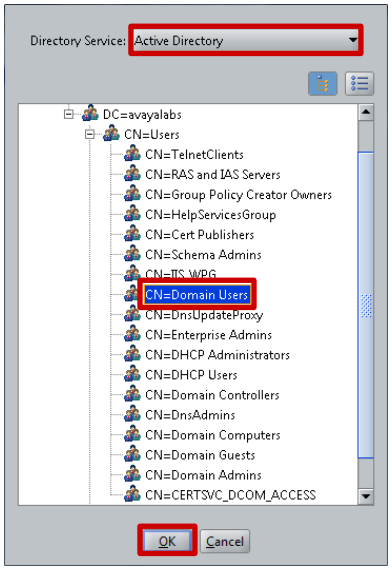

**2 Set the *Virtual Group Name* to *Domain Users* then click *OK*:**



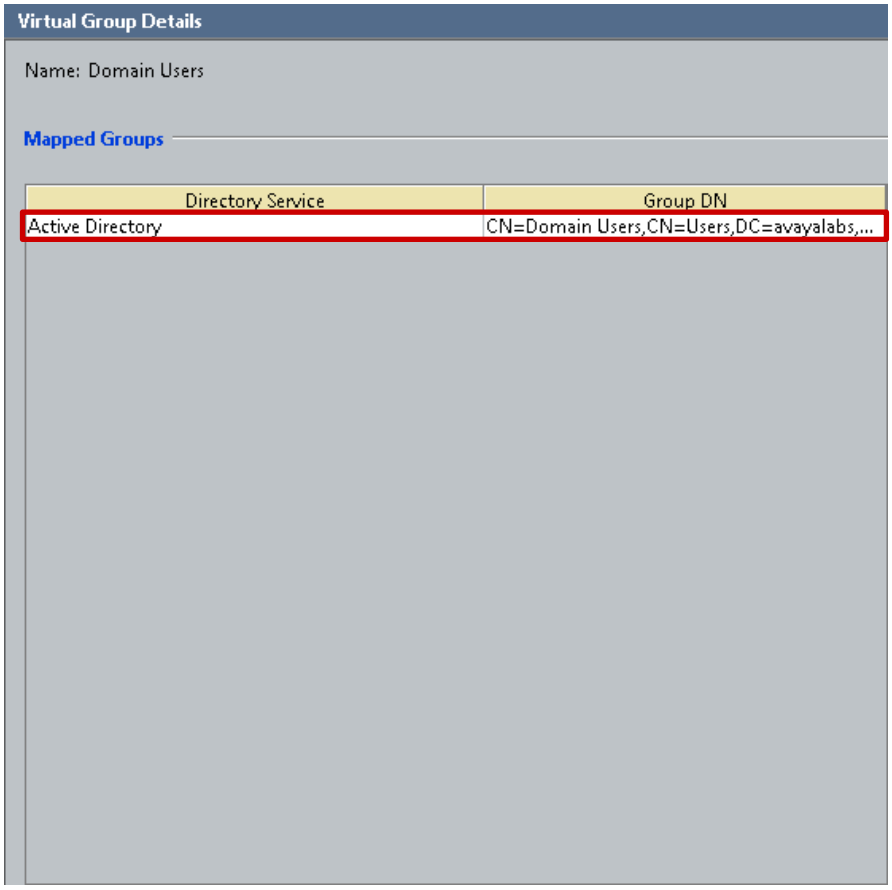
**3 A *Virtual Group* named Domain Users has now been created. Click *Add* to map the *Virtual Group* to the Active Directory *Domain Users* group:**




**4 In the *Map Groups* window select the *Directory Service* named *Active Directory*. Browse the tree then select the Active Directory group named *Domain Users*. Click *OK*:**



**5 A *Virtual Group* and *Active Directory* group mapping has now been created:**




### 2.1.7.3.4 Provisioner Access Policy

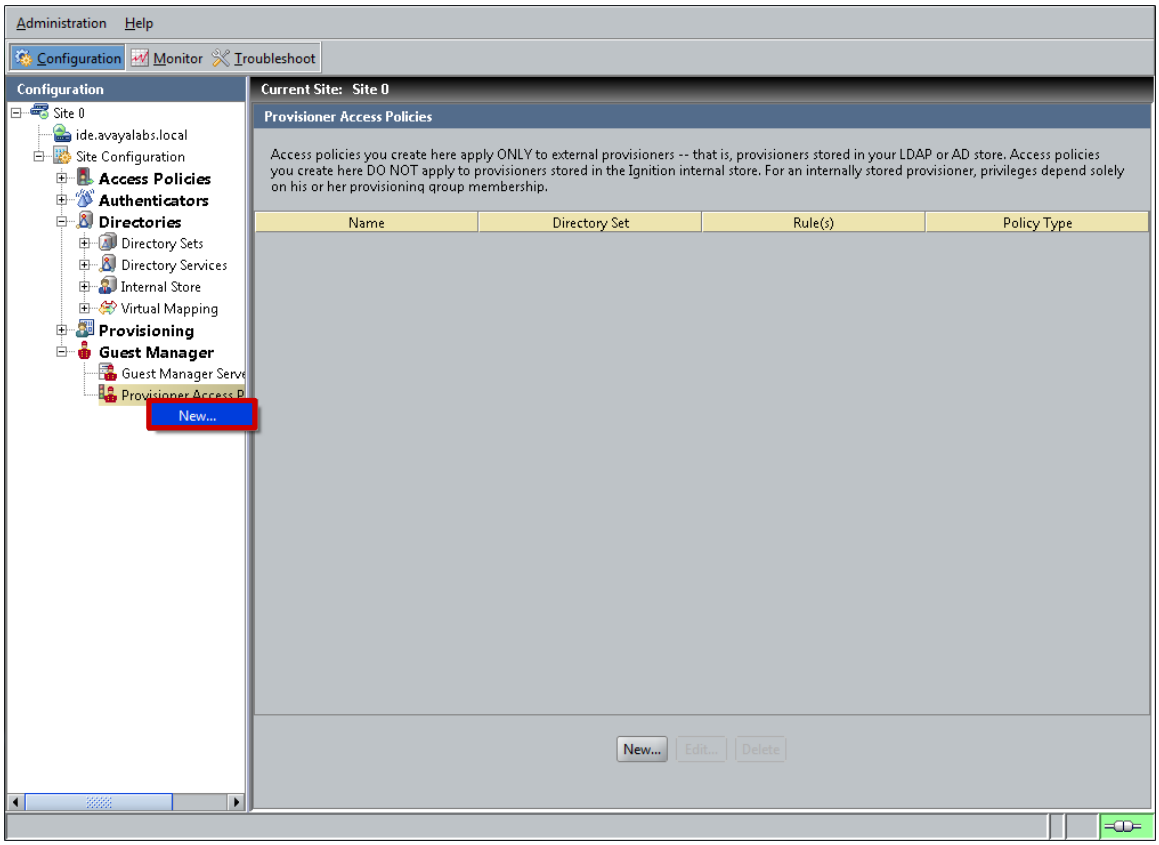
External provisioner users are authenticated and authorized using provisioner access policies. Each provisioner access policy determines the directory set to use to authenticate users against as well as authorization rules that determine the provisioning groups available to authorized users based on virtual group membership.

#### 2.1.7.3.4.1 Configuration Steps

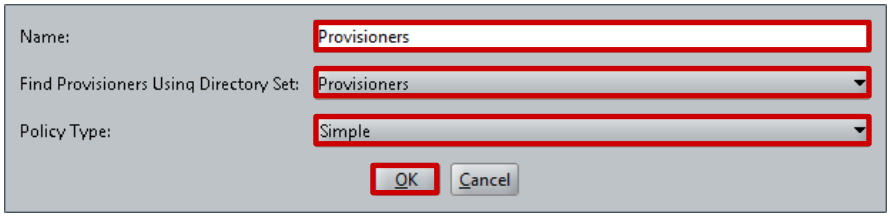
For this configuration step a Provisioner Access Policy will be created with the following parameters:

1) The ***Name*** will be set to ***Provisioners***.
2) The ***Find Provisioners Using Directory Set*** value will be set to the directory set named ***Provisioners***.
3) A simple authorization rule will be created with the following parameters:
    a. The ***Rule Name*** set to ***Domain Users***.
    b. The ***If Member of Virtual Group*** value set to the virtual group called ***Domain Users***.
    c. The internal groups called ***Contractors*** and ***Visitors*** will be added to the ***Grant Access to Provisioning Groups*** list.

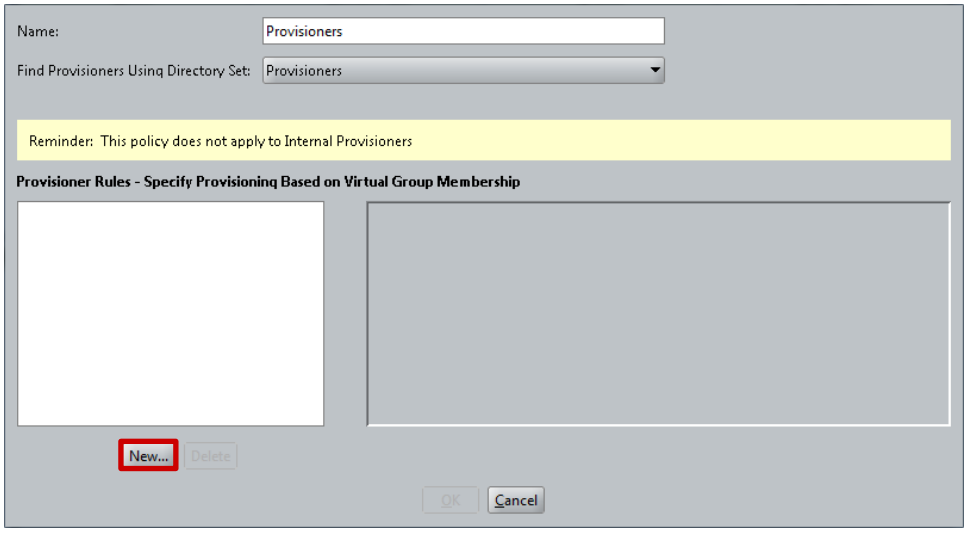
**1 Within the *Ignition Dashboard* select *Configuration > Site Configuration > Guest Manager > Provisioner Access Policy*. *Right click* on *Provisioner Access Policy* then select *New*:**



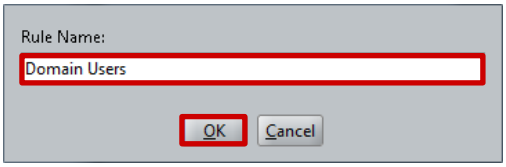

**2 Set the *Name* to *Provisioners* then select the directory set named *Provisioners*. Set the *Policy Type* to *Simple* then click *OK*:**



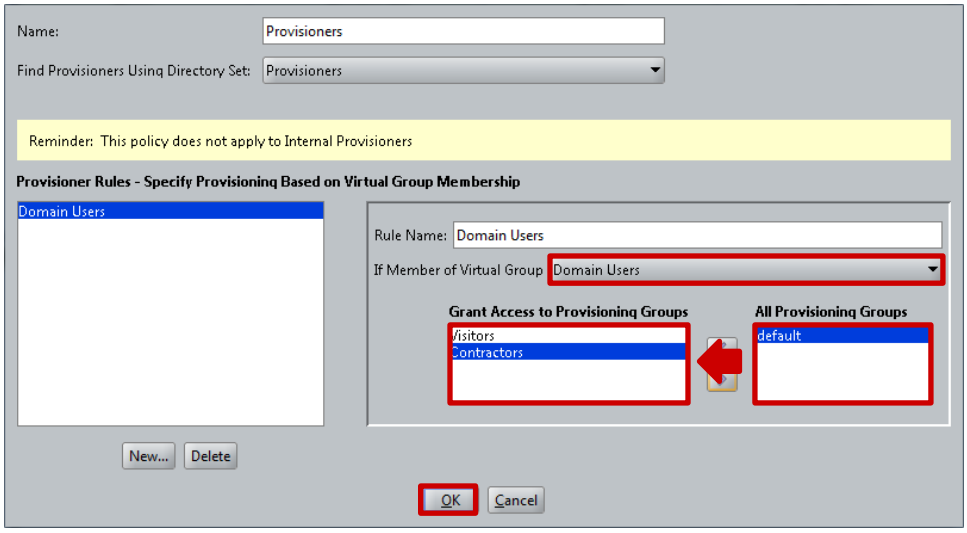
## 3 Click *New* to create a new access rule:



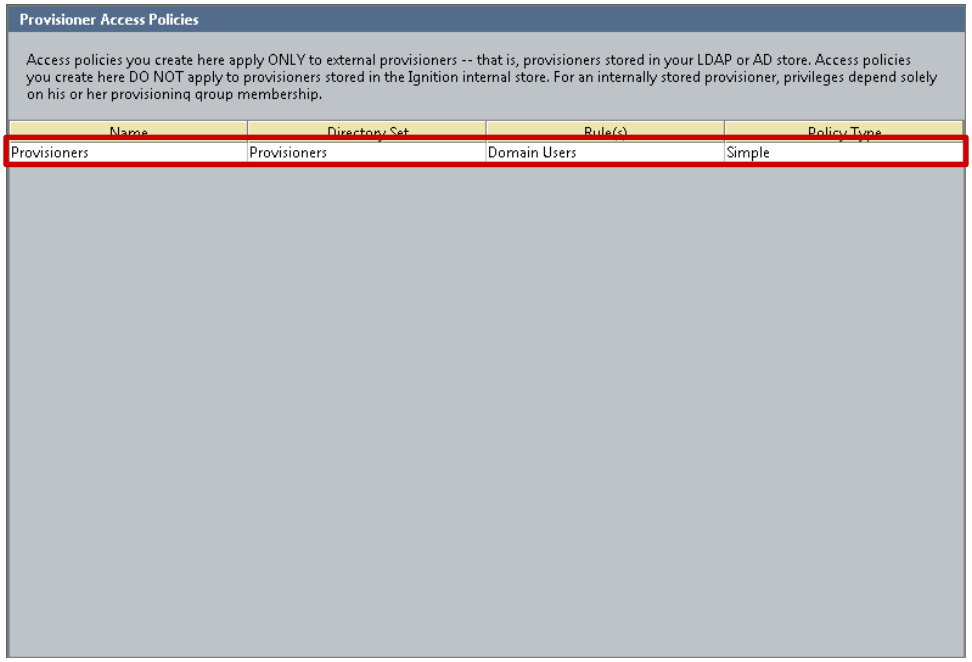

## 4 Set the *Rule Name* to *Domain Users* then click *OK*:




## 5 Set the *If Member of Virtual Group* value to *Domain Users*. Assign the *Visitors* and *Contractors* groups then click *OK*:



**6 A Provisioner Access Policy and rule for has now been created on the Ignition Server:**




### 2.1.7.3.5 Guest Manager Server

External provisioners authenticate to the Ignition Server using RADIUS and there accounts are stored externally to the Ignition Server. When an external provisioner attempts to access the Ignition Guest Manager server, the Ignition Guest Manager verifies the provisioner's credentials on the ignition server using RADIUS.

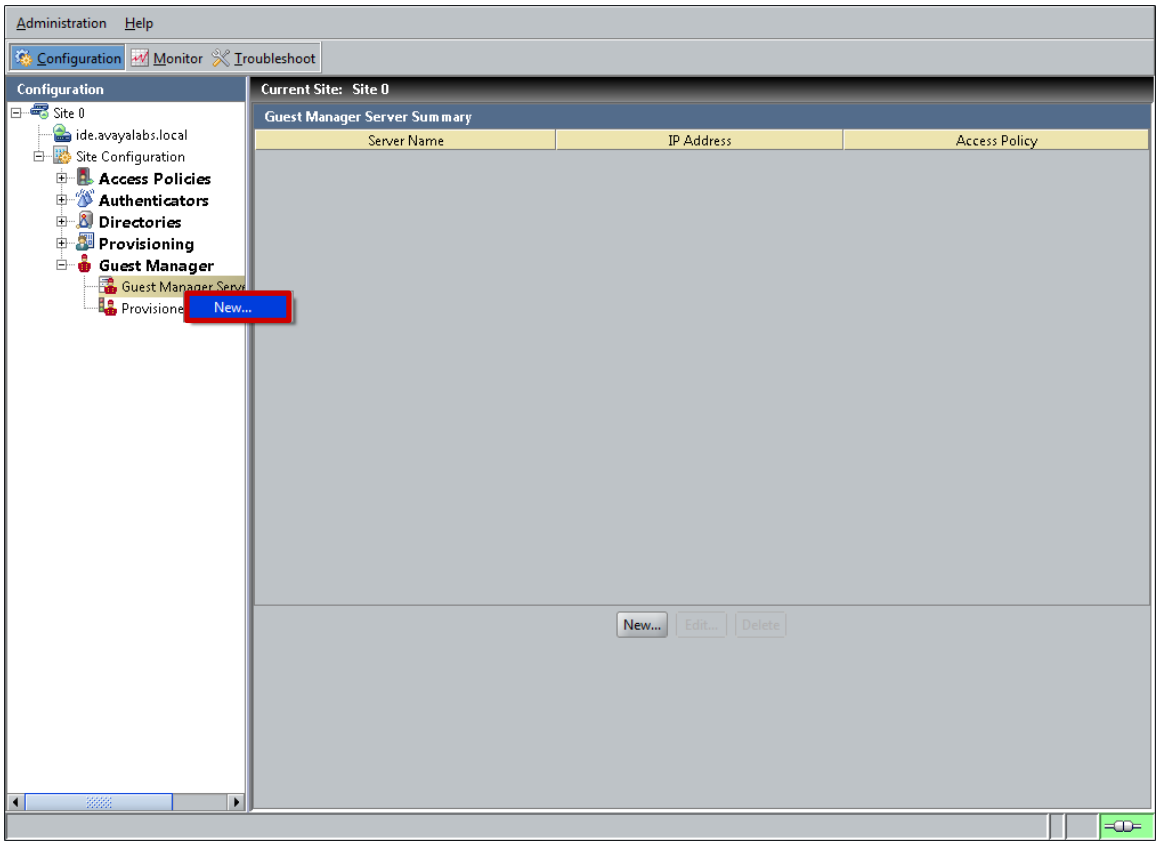
The Ignition Server determines which external user to directory to authenticate the provisioners session against using the directory set specified in the provisioner access policy. Once authenticated the provisioners session is authorized using authorization rules assigned to the provisioner access policy.

#### 2.1.7.3.5.1 Configuration Steps

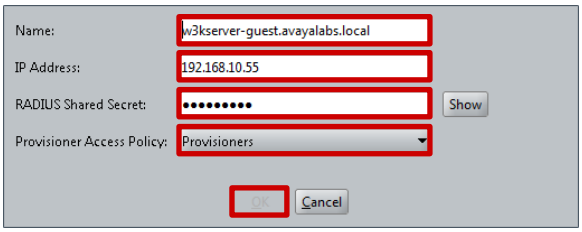
For this configuration step a Guest Manager Server Entry will be created for the Guest Manager server with the following parameters defined:

1) The ***Name*** set to ***w3kserver-guest.avayalabs.local*** which is the hostname assigned to the Ignition Guest Manager server.
2) The ***IP Address*** set to ***192.168.10.55*** which is the host IP address assigned to the Ignition Guest Manager server.
3) The ***RADIUS Shared Secret*** set to ***avayalabs*** which matches the RADIUS shared secret defined on the Ignition Guest Manager server.
4) The Provisioner Access Policy set to ***Provisioners*** which tells the Ignition Server to authenticate provisioner accounts externally against Active Directory.

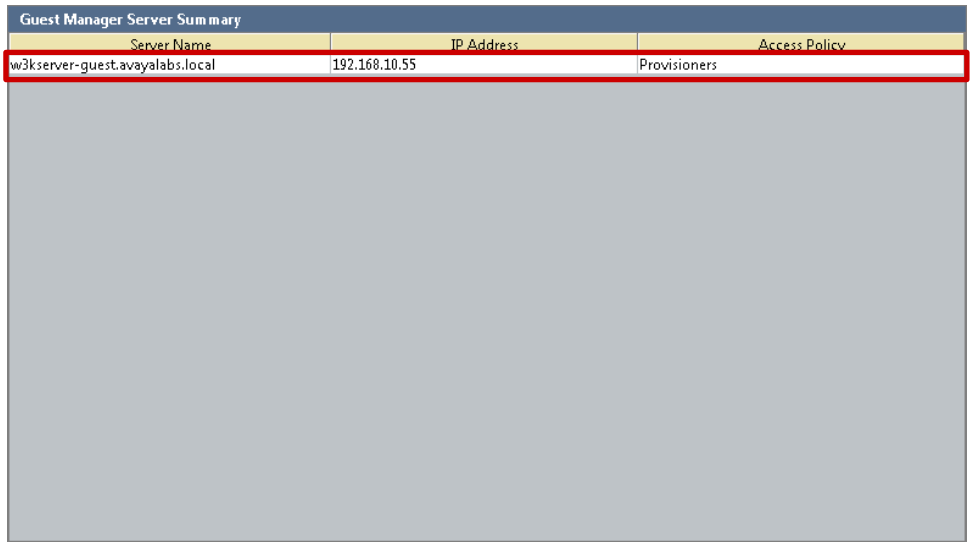
**1 Within the *Ignition Dashboard* select *Configuration > Site Configuration > Guest Manager > Guest Manager Servers*. *Right click* on *Guest Manager Servers* then select *New*:**




**2 Enter the *Name* and *IP Address* for the Ignition Guest Manager server then set the *RADIUS Shared Secret* to *avayalabs*. Set the *Provisioner Access Policy* to *Provisioners Only* then click *OK*:**



**3 A *Guest Manager Server* entry that supports both internal and external provisioners has now been created:**




Internal provisioners will still be able to authenticate and access the Ignition Guest Manager server once support for external provisioners has been enabled.

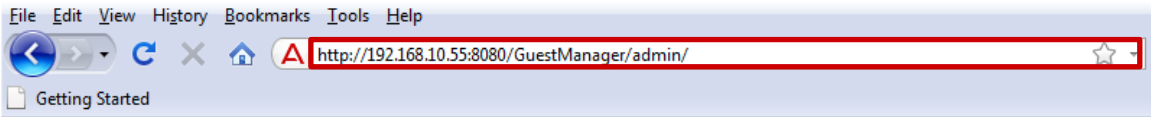
## 2.2 Ignition Guest Manager

The following sections outline the configuration steps required to configure the Avaya Ignition Guest Manager Server to support Guest Access:

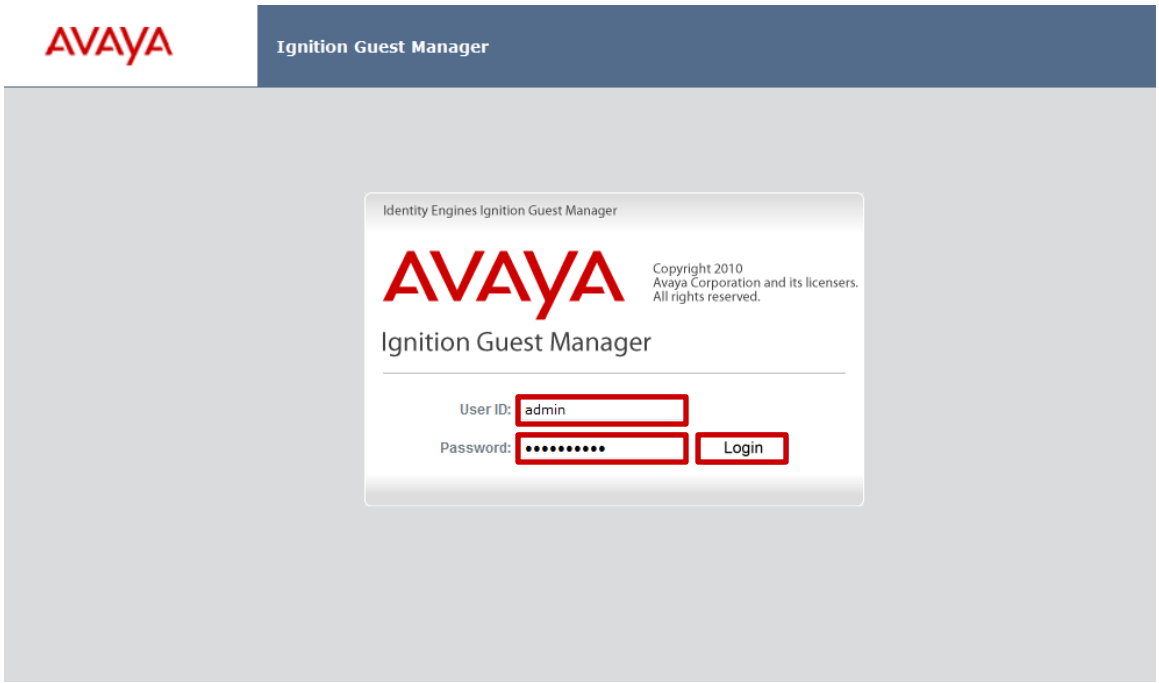
### 2.2.1 Ignition Guest Manager Login

**1 Using a supported web browser connect to the administrative portal on the Ignition Guest Manager server:**

- **HTTP URL Example: *http://<guest-manager-ip-address>:8080/GuestManager/Admin***
- **HTTPS URL Example: *https://<guest-manager-ip-address>:8080/GuestManager/Admin***




**2 Enter the administrative *User ID* and *Password* then click *Login*:**



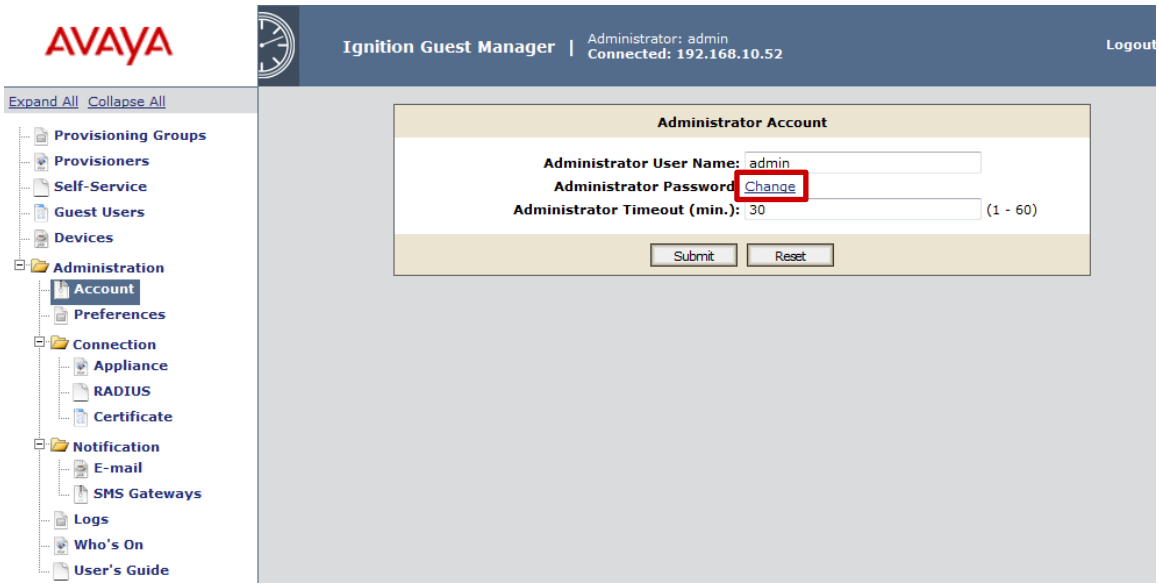

The default username and password for the Ignition Guest Manager is ***admin*** / ***admin***.

## 2.2.2 Basic Administration

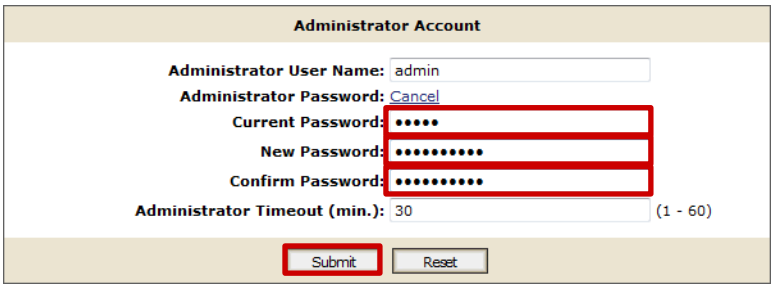
By default the administrative username and password is set to admin / admin. For security purposes it is recommended that you change the default password.

To change the default password on the Ignition Guest Manager Server:

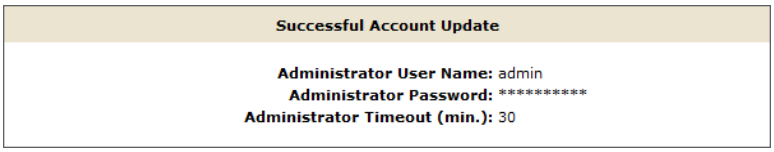
**1 Within the Ignition Guest Manager select *Administration* > *Account*. Click *Change*:**




**2 Enter the *Current Password* then in the *New Password* and *Confirm Password* fields enter and confirm the New Password. Click Submit:**




**3 The admin password will now be changed:**



## 2.2.3 Connections

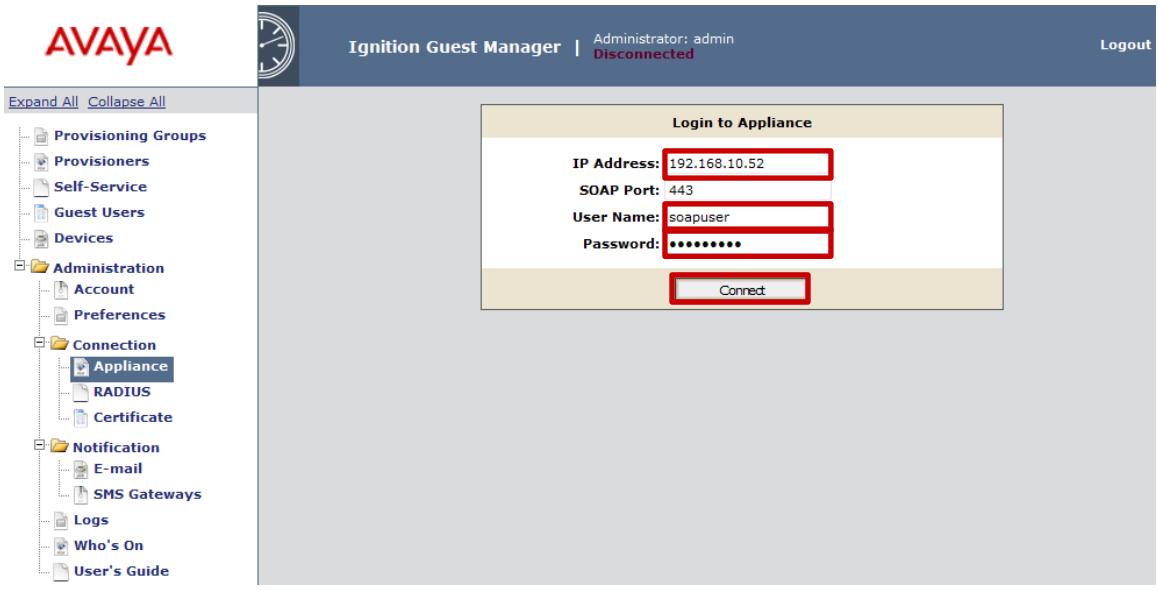
The Ignition Guest Manager Server must be connected to the Ignition Server using the SOAP service. In addition to authenticate internal and external provisioners the RADIUS shared secret must be defined.

### 2.2.3.1 Configuration Steps

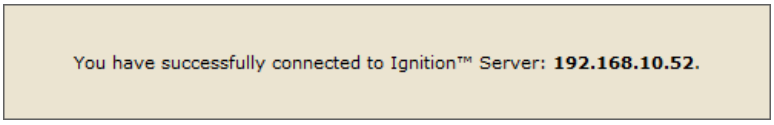
For this configuration step the Ignition Guest Manager Server will be connected to the Ignition Server using the SOAP service:

1) The ***IP Address*** will be set to ***192.168.10.52*** which is the host IP address assigned to the Admin Port on the Ignition Server.
2) The ***Username*** will be set to ***soapuser*** which was defined on the Ignition Server in section 2.1.7.1.
3) The Password will be set to ***avayalabs*** which was defined on the Ignition Server in section 2.1.7.1.
4) The Shared Secret will be set to ***avayalabs*** which was defined on the Ignition Server in section 2.1.7.2 & 2.1.7.3.

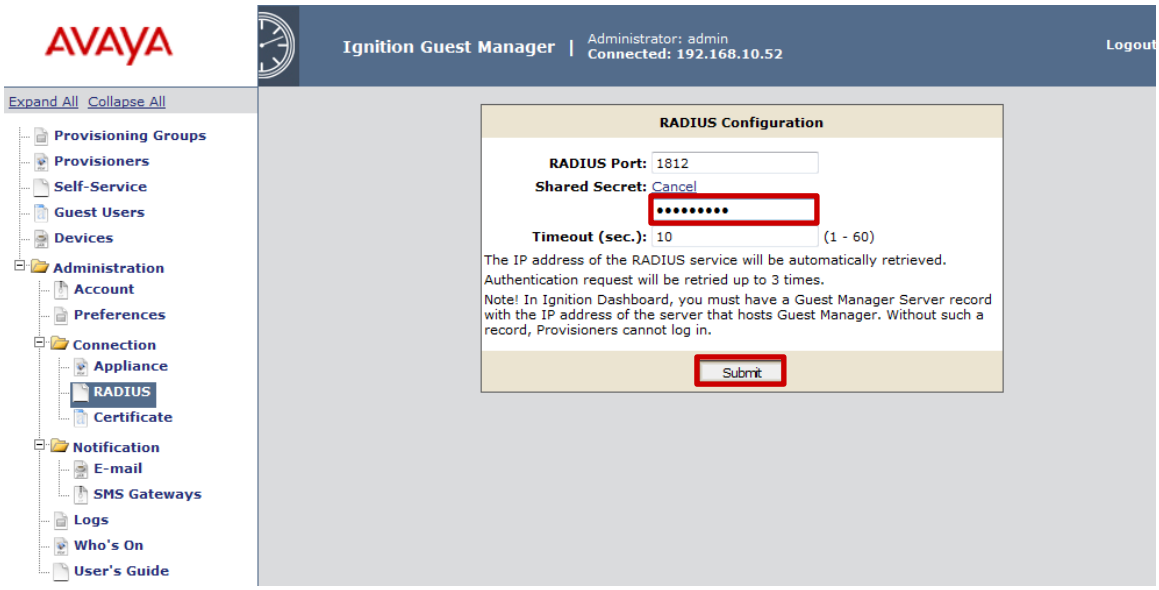
**1 Within the *Ignition Guest Manager* select *Administration* > *Connection* > *Appliance*. Enter the Ignition Server *IP Address* then set the SOAP *User Name* to *soapuser* and the SOAP *Password* to *avayalabs*. Click *Connect*:**



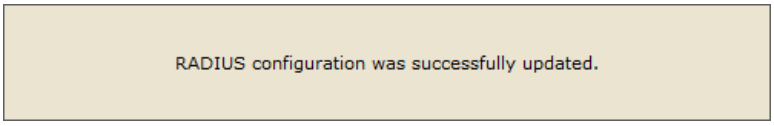

**2 The Ignition Guest Manager will now connect to the Ignition Server using the SOAP service:**



**3 Within the Ignition Guest Manager select *Administration* > *Connection* > *RADIUS*. Set the RADIUS *Shared Secret* to *avayalabs* then click *Submit*:**




**4 The RADIUS shared secret has not been defined:**




The RADIUS shared secret must match the RADIUS shared secret defined for the Guest Manager Server entry on the Ignition Server.

## 2.2.4 Provisioning Groups

Provisioning groups are containers that collect internal users, guest users, and devices and allow these items to be managed by one or more provisioners in the provisioning group. In addition, each provisioner belongs to a provisioning group. The provisioner's membership in the provisioning group determines his or her provisioner rights and Guest Manager application settings.

Each provisioning account can be assigned to one or more provisioning groups. Internal provisioning accounts are assigned to provisioning groups within the Guest Manager application while external provisioning users are assigned to provisioning groups using provisioner access policies defined on the Ignition Server.

### 2.2.4.1 Configuration Steps

For this configuration step a provisioning groups called ***Contractors*** and ***Visitors*** will be defined and mapped to internal groups created on the Ignition Server:

1) A provisioning group named ***Visitors*** be created on the Ignition Guest Manager server with the following parameters:
    a. The ***Name*** will be set to ***Visitors*** which matches the ***Visitors*** internal group created in section 2.1.4 on the Ignition Server.
    b. The ***Access Type*** will be set to ***Visitors*** which associates the provisioning group with the internal group on the Ignition Server.
2) A provisioning group named ***Contractors*** will be created Ignition Guest Manager server with the following parameters:
    a. The ***Name*** will be set to ***Contractors*** which matches the ***Contractors*** internal group created in section 2.1.4 on the Ignition Server.
    b. The ***Access Type*** will be set to ***Contractors*** which associates the provisioning group with the internal group on the Ignition Server.

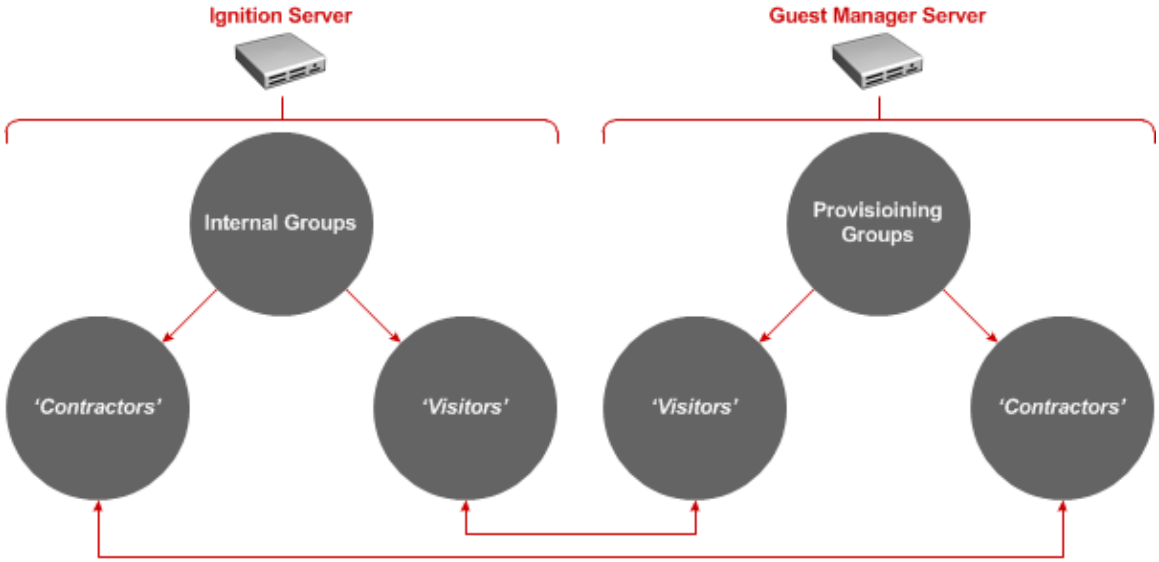
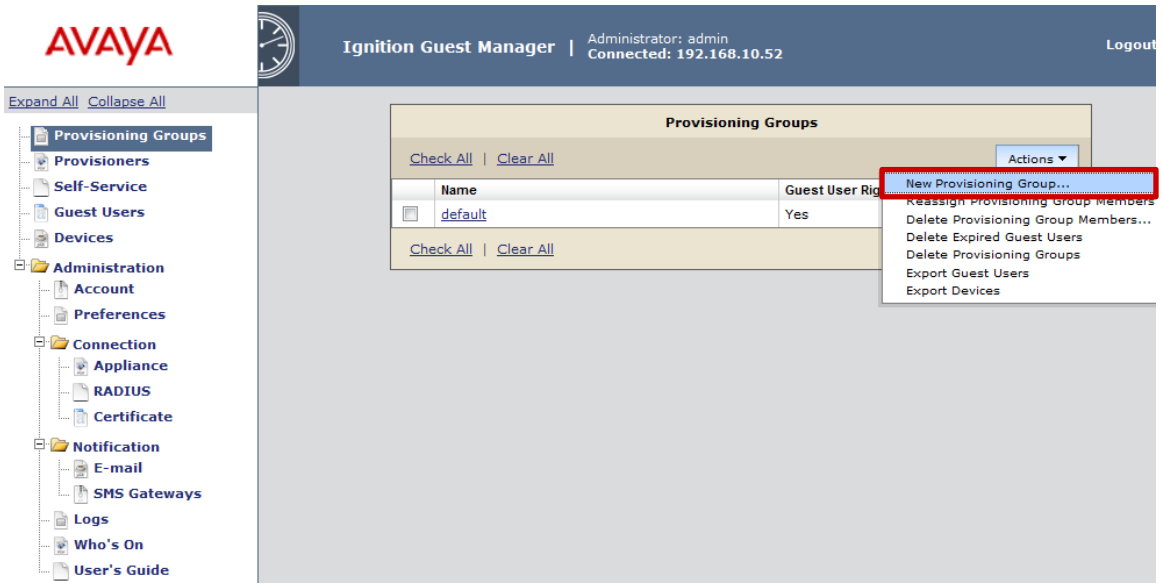
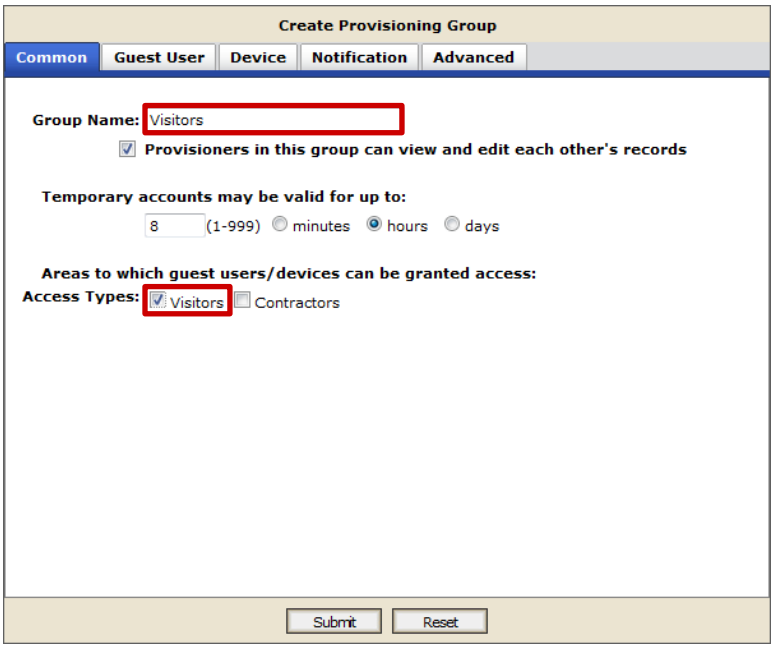



**Figure 2.2.5 – Provisioning Groups**

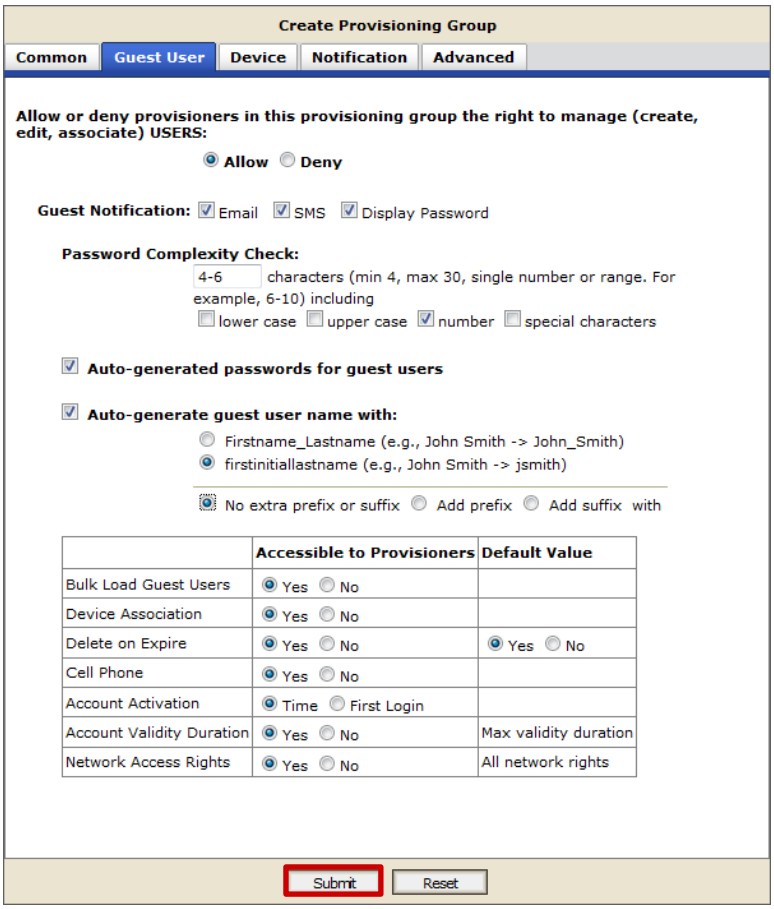
**1 Within the *Ignition Guest Manager* select *Provisioning Groups*. Select *Actions* > *New Provisioning Group*:**




**2 Enter the group name *Visitors* then associate the provisioning group to the internal group on the Ignition Server named *Visitors*:**



**3 Select the *Guest User* tab then modify the guest provisioning options as required. Click *Submit*:**



## 4 A summary of the Provisioning Group and options will be displayed:

**Successful Provisioning Group Creation**

New provisioning group "**Visitors**" was successfully created with the following information:

**Common**

**Provisioners in this group can view and edit each other's records**

**Group Name:** Visitors
**Max Duration:** 8 hours
**Access:** Visitors

**Guest User**

**User Management Right:** Allow
**Guest Notification:** Display Password
**Password Complexity Check:** 4-6 characters including number
**Password Generation:** Yes
**User Name Generation:** firstinitiallastname (e.g., John Smith -> jsmith), No extra prefix or suffix
**Bulk Load Guest Users:** Yes
**Device Association:** Yes
**Delete on Expire:** Yes, default value: Yes
**Cell Phone:** Yes
**Account Activation:** Time
**Account Validity Duration:** Yes
**Network Access Rights:** Yes

**Device**

**Device Management Right:** Deny

**Notification**

**SMS Template:** New guest user was successfully created.
User Name: $username
Password: $password

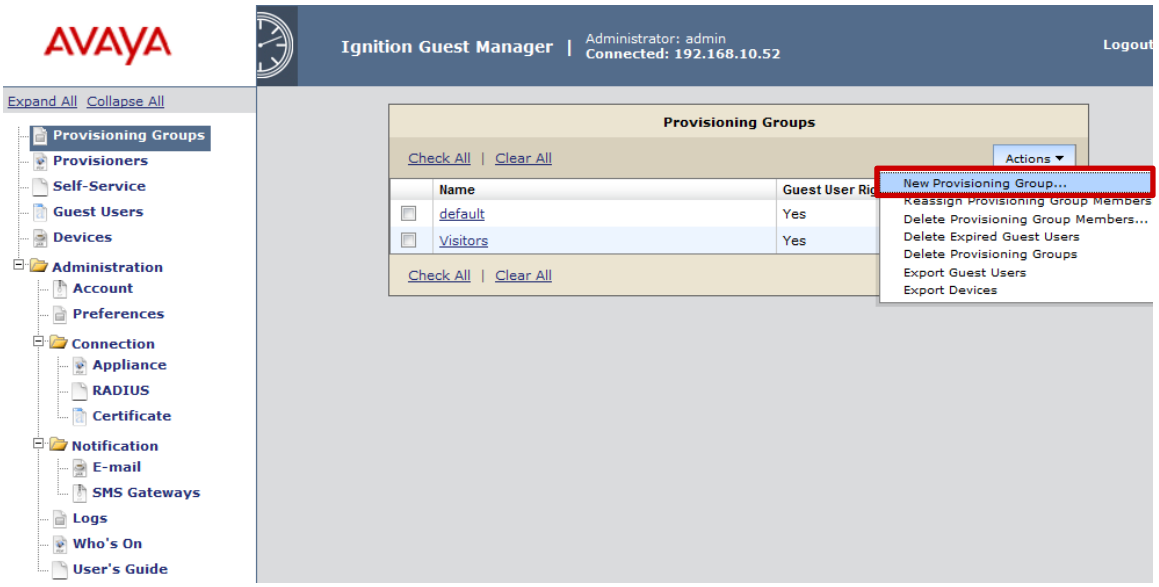
**Email Template:** **Subject:** Guest user account
**Message:** User Name: $username
Password: $password
First Name: $firstname
Last Name: $lastname
E-mail: $email
Comments: $comment
Start Time: $starttime
End Time: $endtime
Access: $access

**Print Info:**

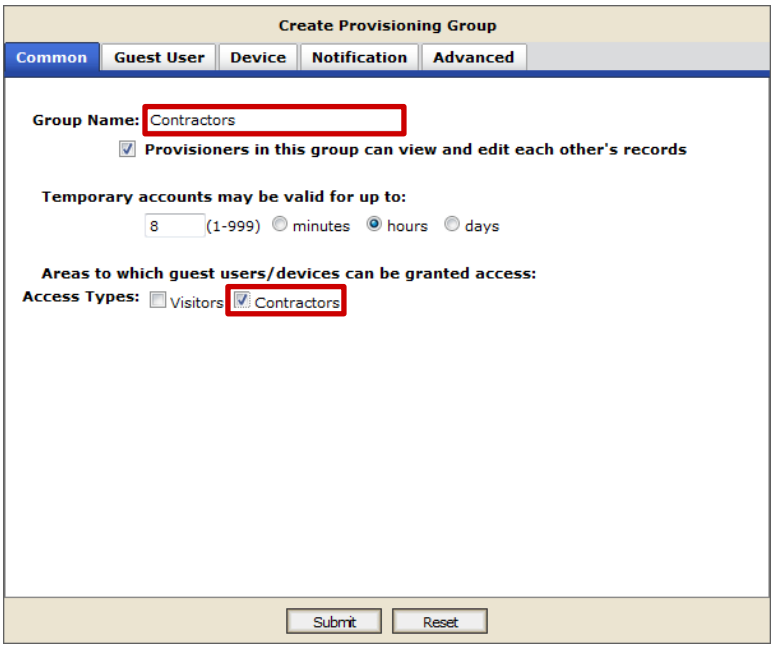
**Advanced**

**Trusted Hosts:** All hosts are trusted
**Time Zone:** America/New_York
**Idle Timeout (min.):** 15

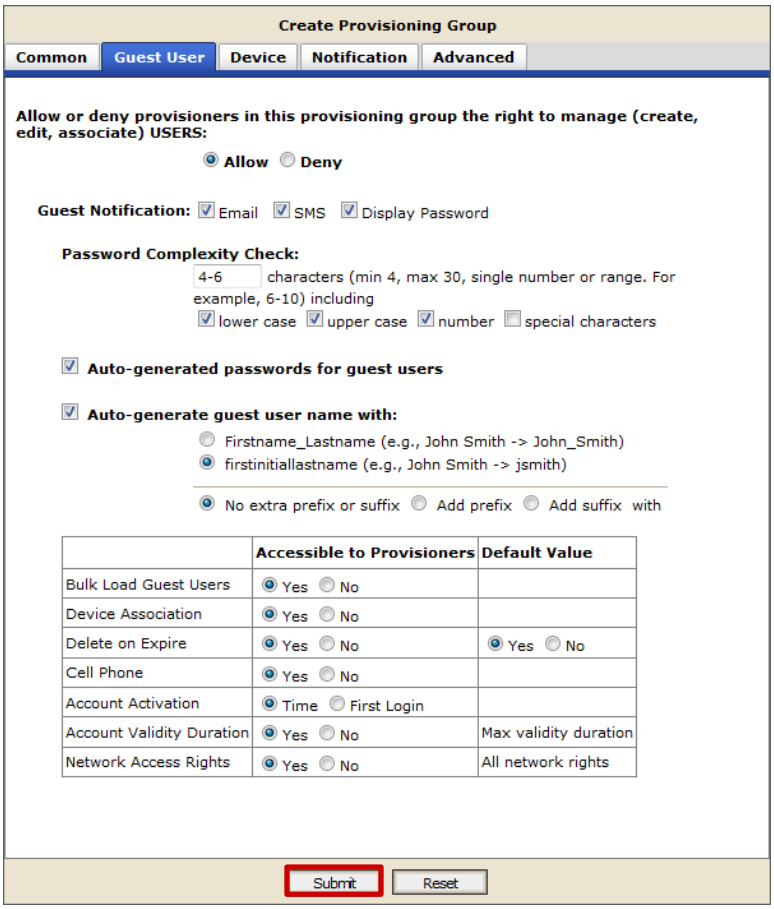
**5 Within the *Ignition Guest Manager* select *Provisioning Groups*. Select *Actions* > *New Provisioning Group*:**




**6 Enter the group name *Contractors* then associate the provisioning group to the internal group on the Ignition Server named *Contractors*:**



**7 Select the *Guest User* tab then modify the guest provisioning options as required. Click *Submit*:**



## 8 A summary of the Provisioning Group and options will be displayed:

**Successful Provisioning Group Creation**

New provisioning group "**Contractors**" was successfully created with the following information:

**Common**

**Provisioners in this group can view and edit each other's records**
**Group Name:** Contractors
**Max Duration:** 8 hours
**Access:** Contractors

**Guest User**

**User Management Right:** Allow
**Guest Notification:** Display Password
**Password Complexity Check:** 4-6 characters including lower case, upper case, number
**Password Generation:** Yes
**User Name Generation:** firstinitiallastname (e.g., John Smith -> jsmith), No extra prefix or suffix
**Bulk Load Guest Users:** Yes
**Device Association:** Yes
**Delete on Expire:** Yes, default value: Yes
**Cell Phone:** Yes
**Account Activation:** Time
**Account Validity Duration:** Yes
**Network Access Rights:** Yes

**Device**

**Device Management Right:** Deny

**Notification**

**SMS Template:** New guest user was successfully created.
User Name: $username
Password: $password
**Email Template:** **Subject:** Guest user account
**Message:** User Name: $username
Password: $password
First Name: $firstname
Last Name: $lastname
E-mail: $email
Comments: $comment
Start Time: $starttime
End Time: $endtime
Access: $access
**Print Info:**

**Advanced**

**Trusted Hosts:** All hosts are trusted
**Time Zone:** America/New_York
**Idle Timeout (min.):** 15

## 9 Provisioning Groups named *Visitors* and *Contractors* have now been created:

**Provisioning Groups**

Check All | Clear All  Actions

| | Name | Guest User Rights | Device Rights |
|---|---|---|---|
| | Contractors | Yes | No |
| | default | Yes | No |
| | Visitors | Yes | No |

Check All | Clear All  Actions

## 2.2.5 Internal Provisioners

A provisioner is a person who creates and manages guest user accounts and device records using the Guest Manager application.

Internal provisioner accounts are stored locally on the Ignition Server while external provisioner accounts are stored in the Active Directory or LDAP user store. When a provisioner account is created on the Ignition Guest Manager Server, the account will be created in the local store on the Ignition Server.

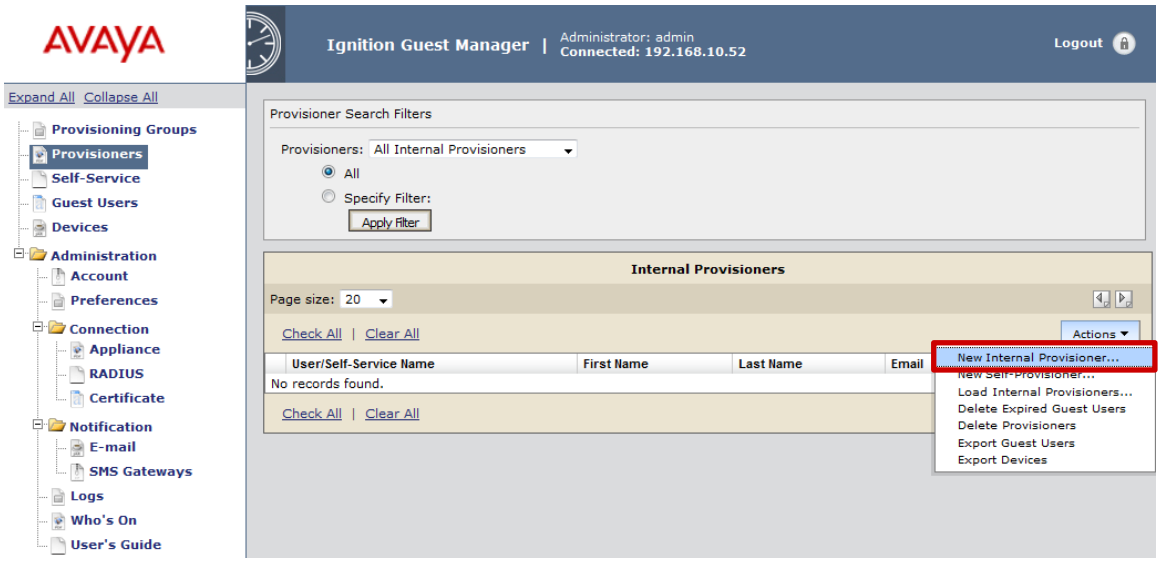
The Ignition Server can simultaneously supports internal and external provisioner accounts at the same time if required.

Each internal provisioner will use the Guest Manager application to create, modify, and delete guest user accounts. The provisioner owns the guest user accounts that he or she creates. If the provisioner's account is deleted, then the guest user accounts it owns are either transferred to other provisioners or deleted.

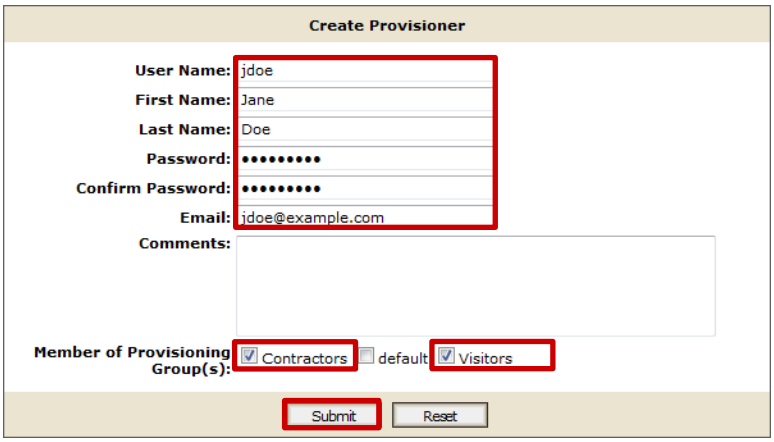
### 2.2.5.1 Configuration Steps

For this configuration step an internal provisioning account will be created and assigned to both the ***Contractor*** and ***Visitor*** provisioning groups:

**1 Within the *Ignition Guest Manager* select *Provisioners*. Select *Actions* > *New Provisioners*:**

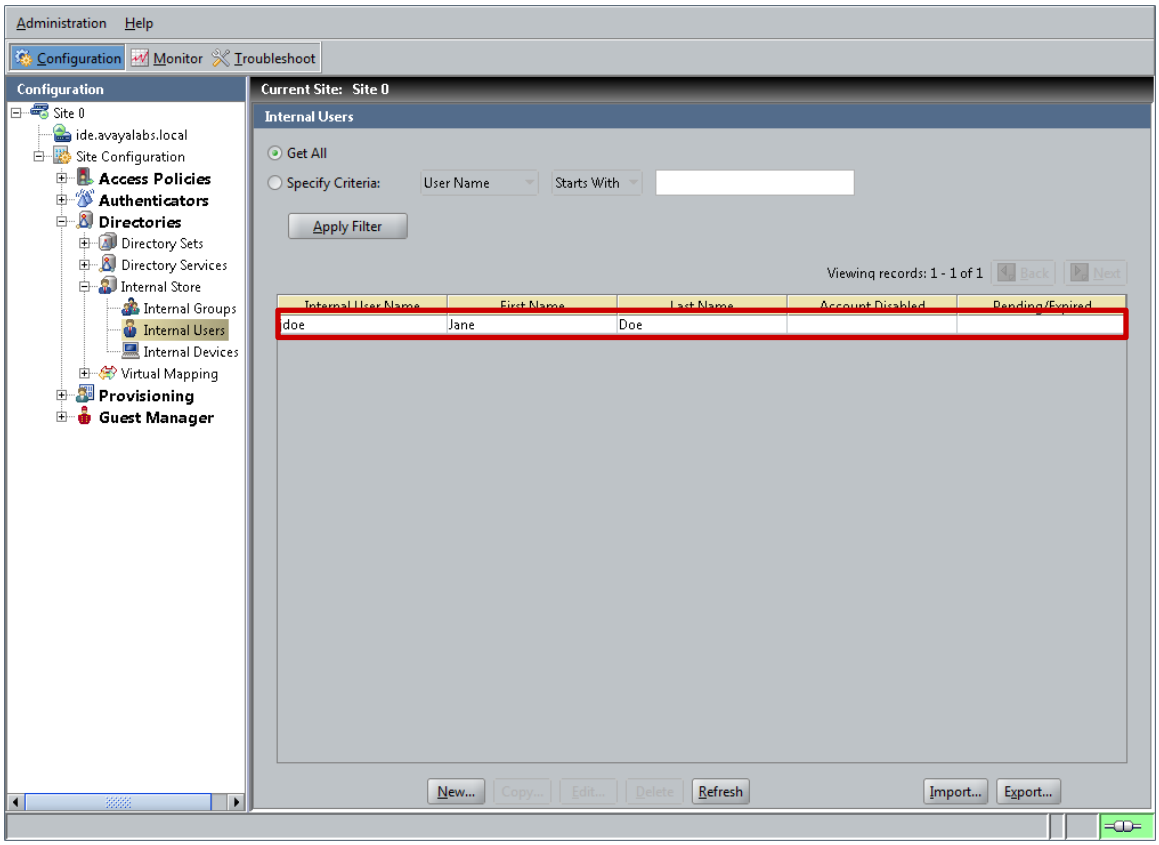


**2 Enter a name, password and email address then assign the *Contractors* and *Visitors* provisioning groups. Click *Submit*:**




**3 An *Internal Provisioning* user account has now been created on the Ignition Server:**

**4 Within the *Ignition Dashboard* select *Configuration > Site Configuration > Directories > Internal Users*. The internal provisioning user account will be displayed:**



## 2.3 Wireless LAN 8180 Controller

The following sections outline the configuration steps required to configure the Avaya WC8180 wireless controller to provide guest access using a Captive Portal that authenticates guest users against the Ignition Server:

### 2.3.1 Preliminary Configuration

The Avaya 8100 series Wireless Controller requires basic network configuration before it can provide wireless services to users. The Wireless Controller will be configured with the necessary management and user VLANs as well as the virtual IP addresses required for management, Access Point communications and captive-portal capture and re-direction. In addition wireless services need to be configured and enabled so that the Avaya 8100 series Wireless Controller can manage Avaya 8100 series Access Points and serve Wireless LANs.

#### 2.3.1.1 Configuration Steps

For this configuration step a factory defaulted WC8180 Wireless Controller will be configured with the following basic parameters:

1. Management VLAN 10 and guest VLAN 14 will be created:
    a. VLAN ***10*** will be assigned the IP address ***192.168.10.30/24*** and will be assigned to ports ***1-11,13-16***.
    b. VLAN ***14*** will be assigned the IP address ***192.168.14.30/24*** and will be assigned to port ***12***.
    c. IP routing will be ***enabled***.
2. A static default route will be defined pointing to the ***192.168.10.1*** IP address assigned to the private internal interface on the firewall.
3. A valid license file will be uploaded.
4. Wireless services will be enabled:
    a. The ***system-ip address*** will be set to the management IP address ***192.168.10.30***.
    b. The WC8180 will be configured as ***MDC capable*** with the password ***AvayaLabs12!@*** assigned.
    c. The WC8180 will join the wireless domain named ***AVAYALABS***.
    d. The wireless domain will be configured with the country code ***US***.
    e. The wireless domain will be configured to automatically ***promote-discovered-aps***.
    f. A mobility VLAN named ***VLAN14*** will be created and mapped to VLAN id ***14***.

##### 2.3.1.1.1 AACLI

**1 Using the *AACLI* access the *global* configuration context:**

```
WC8180# configure terminal
WC8180(config)#
```

## 2 Create VLAN *10* and *14* and assign port membership:

```
WC8180(config)# vlan create 10 name VLAN10 type port
WC8180(config)# vlan create 14 name VLAN14 type port
WC8180(config)# vlan members remove 1 1-26
WC8180(config)# vlan members add 10 1-11,13-26
WC8180(config)# vlan members add 14 12
WC8180(config)# vlan mgmt 10
WC8180(config)# show vlan

Id  Name                 Type     Protocol         User PID Active IVL/SVL Mgmt
--- -------------------- -------- ---------------- -------- ------ ------- ----
1   VLAN #1              Port     None             0x0000   Yes    IVL     No
        Port Members: NONE
10  VLAN10               Port     None             0x0000   Yes    IVL     Yes
        Port Members: 1-11,13-26
14  VLAN14               Port     None             0x0000   Yes    IVL     No
        Port Members: 12
Total VLANs: 3
```

## 3 Assign virtual IP addresses to VLAN *10* and VLAN *14* and mark VLAN *10* for *management*:

```
WC8180(config)# interface vlan 10
WC8180(config-if)# ip address 192.168.10.30 255.255.255.0
WC8180(config-if)# interface vlan 14
WC8180(config-if)# ip address 192.168.14.30 255.255.255.0
WC8180(config-if)# exit
WC8180(config)# show vlan ip

==============================================================================
Vid  ifIndex Address         Mask            MacAddress        Offset Routing
==============================================================================
Primary Interfaces
------------------------------------------------------------------------------
10   10010   192.168.10.30   255.255.255.0   00:1B:4F:CA:19:80 1      Enabled
14   10014   192.168.14.30   255.255.255.0   00:1B:4F:CA:19:81 2      Enabled
------------------------------------------------------------------------------
% Total of Primary Interfaces: 2
```

## 4 Globally enable *IP Routing*:

```
WC8180(config)# ip routing
WC8180(config)# show ip routing

IP Routing is enabled
IP ARP life time is 21600 seconds
```

## 5 Define a static *Default Route* that points to the Firewalls IP Address on VLAN *14*:

```
WC8180(config)# ip route 0.0.0.0 0.0.0.0 192.168.14.1 1
WC8180(config)# show ip route

================================================================================
                                    Ip Route
================================================================================
DST             MASK            NEXT            COST    VLAN PORT PROT TYPE PRF
--------------------------------------------------------------------------------
0.0.0.0         0.0.0.0         192.168.10.1    1        14   12    S  IB     5
192.168.10.0    255.255.255.0   192.168.10.30   1        10   ----  C  DB     0
192.168.14.0    255.255.255.0   192.168.14.30   1        14   ----  C  DB     0
Total Routes: 3
--------------------------------------------------------------------------------
```

## 6 If necessary upload a license file. Once installed the WC8180 will need to be reset:

```
WC8180(config)# copy tftp license address 192.168.10.6 filename license.dat

License successfully downloaded.
NOTE:  system must be rebooted to activate license.

WC8180(config)# boot
```

## 7 Using the *AACLI* access the *wireless* configuration context. Set the *interface-ip* to the virtual IP Address assigned to VLAN *10* and enable wireless services:

```
WC8180> enable
WC8180# configure terminal
WC8180(config)# wireless
WC8180(config-wireless)# interface-ip 192.168.10.30
WC8180(config-wireless)# enable
WC8180(config-wireless)# show wireless

Status            : Enabled
Interface IP      : 192.168.10.30
TCP/UDP base port : 61000
```

## 8 Configure the WC8180 as *MDC-Capable* and define a *password*:

```
WC8180(config-wireless)# controller mdc-capable

% Domain password should be between 10-15 characters long.
% Password must contain a minimum of 2 upper, 2 lowercase letters
% 2 numbers and 2 special characters like !@#$%^&*()

Enter domain password: AvayaLabs12!@
Verify Domain password: AvayaLabs12!@
```

## 9 Create and join the *Wireless Domain* using the password defined in the previous step:

```
WC8180(config)# end
WC8180# wireless controller join-domain domain-name AVAYALABS mdc-address
192.168.10.30

Enter Domain Secret: AvayaLabs12!@

WC8180# show wireless controller domain-membership

Domain Name             : AVAYALABS
Domain Role             : Active MDC
Domain Action Status    : Join Success
Action Failure Reason   : None
```

## 10 Access the *wireless* configuration context. Create a *Mobility VLAN* for the guest users:

```
WC8180# configure terminal
WC8180(config)# wireless
WC8180(config-wireless# domain mobility-vlan VLAN14
WC8180(config-wireless# show wireless domain mobility-vlan

  ---------------------------------------------------
  Mobility VLAN Name                Status
  --------------------------------  -----------------
  default-MVLAN                     Active
  VLAN14                            Active
  ---------------------------------------------------
```

## 11 Map the *Mobility VLAN* to the physical *Guest* VLAN Id:

```
WC8180(config-wireless# switch vlan-map VLAN14 lvid 14
WC8180(config-wireless# show wireless switch vlan-map

-----------------------------------------------------------------
Mobility VLAN Name               LVID  Role    Weight  Track
------------------               ----- -----   ------- -----
VLAN14                           14    None     1      NONE
default-MVLAN                    0     None     1      NONE
-----------------------------------------------------------------
```

**12 Define a *country-code* and enable then option to *Automatically Promote Discovered APs*. Finally *synchronize* the configuration:**

```
WC8180(config-wireless# domain
WC8180(config-wireless# country-code us
WC8180(config-wireless# domain auto-promote-discovered-ap
WC8180(config-wireless# end
WC8180# wireless controller config-sync
WC8180# show wireless domain info

  Country                              : US
  AP QoS Mode                          : Disabled
  Roaming Timeout                      : 30 seconds
  TSPEC Violation Report Interval      : 300 seconds
  Auto Promote Discovered AP           : Enabled
  AP Image Update Download Group Size  : 5 %
  AP Image Update Reset Group Size     : 5 %
  AP Reset Group Size                  : 5 %
```

## 2.3.2 Captive Portal

The Avaya 8100 series Wireless Controllers supports an integrated captive-portal feature that offers a simple way to provide secure authenticated access to users and devices using a standard web browser. Captive-portal authentication allows enterprises to offer authenticated access to the network for guest users by capturing and re-directing a web browsers session to a captive-portal login page hosted on the Avaya 8100 series Wireless Controllers.

The guest user must enter a valid username and password which is authenticated on the Ignition Server before being granted access to the network.

### 2.3.2.1 Configuration Steps:

For this configuration step the global captive-portal service parameters will be modified and a captive-portal profile created:

1. The global captive portal configuration will be modified with the following parameters:
    a. The global state will be ***Enabled***.
    b. The ***HTTP*** redirection port redirection will be set to ***8080***.
2. A network profile will be created with the following parameters:
    a. The ***Id*** will be set to ***1***.
    b. The ***Name*** will be set to ***AVAYA-GUEST*** which will match the network profile name.
    c. The ***Protocol Mode*** will be set to ***HTTP***.

#### 2.3.2.1.1 AACLI

**1 Using the *AACLI* access the *Wireless* configuration context:**

```
WC8180# configure terminal
WC8180(config)# wireless
```

**2 Set the *HTTP* port to *8080*:**

```
WC8180(config-wireless)# captive-portal http-port 8080
```

**3 Globally enable the *Captive Portal*:**

```
WC8180(config-wireless)# captive-portal enable
WC8180(config-wireless)# show wireless captive-portal info

  Mode                        : Enabled
  Additional HTTP Port        : 8080
  Additional HTTPS Port       : 0
  Statistics Reporting Interval: 120
  Authentication Timeout      : 300
  HTTPS Certificate           : Not present
```

**4 Access the *Captive Portal Profile 1* configuration context:**

```
WC8180(config-wireless)# captive-portal profile 1
```

**5 Set the *Profile Name* to *AVAYA-GUEST* and the *Protocol-Mode* to *HTTP*:**

```
WC8180(config-cp-profile)# profile-name AVAYA-GUEST
WC8180(config-cp-profile)# protocol-mode http
WC8180(config-cp-prodile)# show wireless captive-portal profile 1 detail

Captive Portal Profile ID: 1
    Name                        : AVAYA-GUEST
    Protocol Mode               : http
    User Logout Mode            : Enabled
    Session Timeout (seconds)   : 0
    Idle Timeout (seconds)      : 0
    Max Bandwidth Up (bps)      : 0
    Max Bandwidth Down (bps)    : 0
    Max Input Octets (bytes)    : 0
    Max Output Octets (bytes)   : 0
    Max Total Octets (bytes)    : 0
    Foreground Color            : #999999
    Background Color            : #BFBFBF
    Separator  Color            : #B70024
```

## 2.3.3 RADIUS Profiles

The Avaya 8100 series Wireless Controller can authenticate guest users against one or more RADIUS servers assigned to a RADIUS profile. The RADIUS profiles are then assigned to one or more network profiles that require 802.1X, MAC or captive-portal authentication. The Avaya 8100 series Wireless Controller will then direct all RADIUS authentication requests to the available servers defined in the RADIUS profile.

### 2.3.3.1 Configuration Steps

For this configuration step a RADIUS authentication profile named ***IDE*** will be created with the Ignition Server added as a RADIUS server. The following RADIUS parameters will be defined:

1) The ***IP Address*** set to ***192.168.10.52*** which matches the ***IP Address*** assigned to the ***Admin Port*** on the ***Ignition Server***.
2) The ***RADIUS Shared Secret*** set to ***avayalabs*** which matches the RADIUS shared secret assigned to the WC 8180 in section 2.1.6.

#### 2.3.3.1.1 AACLI

**1 Using the *AACLI* access the *Wireless* Security configuration context:**

```
WC8180(config-cp-profile)# security
```

**2 Create a *RADIUS Profile* with the id *1* named *IDE* and set the *type* to *Auth*:**

```
WC8180(config-security)# radius profile IDE type auth
WC8180(config-security)# show wireless security radius profile

Total radius profiles: 1, auth: 1, acct: 0
Radius Profile                   Type
-------------------------------- --------------
IDE                              Authentication
```

**3 Create a *RADIUS Server* entry with the *IP Address* assigned to the *Ignition Server* and assign it to the RADIUS Profile named *IDE*. When asked enter and confirm the secret *avayalabs*:**

```
WC8180(config-security)# radius server 192.168.10.52 IDE secret

Enter server secret: avayalabs
Verify server secret: avayalabs

WC8180(config-security)# show wireless security radius server

Total radius servers: 1
Server IP       Radius Profile                   Port# Priority
--------------- -------------------------------- ----- --------
192.168.10.52   IDE                              1812  1
```

## 2.3.4 Network Profiles

Network Profiles define the wireless service parameters that radios advertise to wireless users. Each network profile defines the SSID name advertised to users, the mobility VLAN users are assigned, the authentication type and encryption ciphers. In addition the network profile defines the QoS mode and parameters for the wireless service.

### 2.3.4.1 Configuration Steps

For this configuration step ***Network Profile 2*** will be created with the following parameters will be defined:

1) The ***Profile Name*** set to ***AVAYA-GUEST*** which for consistency matches the SSID name.
2) The ***SSID*** set to ***AVAYA-GUEST*** which is advertised to wireless clients.
3) The ***Mobility VLAN Name*** set to ***VLAN14*** which is where the guest user's traffic will be forwarded.
4) ***User Validation*** set to ***RADIUS*** and the ***RADIUS profile*** named ***IDE*** assigned.
5) ***Captive Portal*** authentication ***Enabled*** and the ***Captive Portal Profile 1*** assigned.

#### 2.3.4.1.1 AACLI

**1 Using the *AACLI* access the *Wireless Network Profile 2* configuration context:**

```
WC8180(config-security)# network-profile 2
```

**2 Set the *Profile Name* and *SSID Name* to *AVAYA-GUEST* and define the *Mobility VLAN* name:**

```
WC8180(config-network-profile)# profile-name AVAYA-GUEST
WC8180(config-network-profile)# ssid AVAYA-GUEST
WC8180(config-network-profile)# mobility-vlan VLAN14
```

**3 Set the *User Validation* mode to *RADIUS* and assign the *RADIUS Profile* named *IDE*:**

```
WC8180(config-network-profile)# user-validation radius
WC8180(config-network-profile)# radius authentication-profile IDE
```

**4 Assign the *Captive Profile* Id *1* then enable *Captive Portal*:**

```
WC8180(config-network-profile)# captive-portal profile-id 1
WC8180(config-network-profile)# captive-portal enable
WC8180(config-network-profile)# show wireless network-profile 2 detail
```

```
Network Profile ID: 2
    Name                                : AVAYA-GUEST
    SSID                                : AVAYA-GUEST
    Hide SSID                           : No
    Mobility Vlan Name                  : VLAN14
    No Response to Probe Request        : Disabled
    Captive Portal Mode                 : Enabled
    User Validation                     : RADIUS
    Captive Portal Profile Id           : 1
    Local User Group                    : Default
    RADIUS Authentication Profile Name  : IDE
    RADIUS Accounting Profile Name      :
    RADIUS Accounting Mode              : Disabled
    Security Mode                       : open
    MAC Validation                      : Disabled
    Wireless ARP Suppression            : Disabled
```

## 2.3.5 AP Profiles

Administrator's provision managed Access Points using AP profiles. AP profiles allow a common set of configuration parameters to be defined and applied to large groups of APs. Each AP profile is AP model specific and assigns radio profiles, network profiles and QoS mappings to Access Points assigned to the AP profile.

Each Access Point radio supports up to 16 Virtual Access Points (VAPs) each of with are assigned a unique MAC address and look like a single Access Point. Each radio can support a maximum of 16 network profile assignments.

### 2.3.5.1 Configuration Steps

For this configuration step ***Network Profile 2*** will be assigned to radios using the default ***AP Profile 1***:

1) ***Network Profile 2*** will be assigned to ***VAP 1*** on ***Radio 1*** (5GHz).
2) ***Network Profile 2*** assigned to ***VAP 1*** on ***Radio 2*** (2.4GHz).

#### 2.3.5.1.1 ACLI

**1 Using the *AACLI* access the *Wireless AP Profile 1* configuration context:**

```
WC8180(config-wireless)# ap-profile 1
```

**2 Assign *Network Profile 2* to *VAP 1* on *Radios 1* & *2*:**

```
WC8180(config-ap-profile)# network 1 1 profile-id 2
WC8180(config-ap-profile)# network 2 1 profile-id 2
WC8180(config-ap-profile)# show wireless ap-profile network 1
```

```
-------------------------------------------------------------------
AP Profile Id  Radio Id  VAP Id  Network Profile Id  Radio Operation
-------------  --------  ------  ------------------  ---------------
           1         1       1                   2  On
           1         2       1                   2  On
-------------------------------------------------------------------
```

## 3 Connect the Avaya 8100 series Access Points to the network and verify they are *managed*:

```
WC8180(config-wireless)# show wireless ap status

-------------------------------------------------------------------------------
AP MAC             AP IP            Controller IP    Status         Need Image
                                                                     Upgrade
-----------------  ---------------  ---------------  -------------  ----------
5C:E2:86:0F:A3:C0  192.168.11.104   192.168.10.30    Managed          No
5C:E2:86:0F:C6:20  192.168.11.101   192.168.10.30    Managed          No
5C:E2:86:10:4A:C0  192.168.11.100   192.168.10.30    Managed          No
-------------------------------------------------------------------------------
```

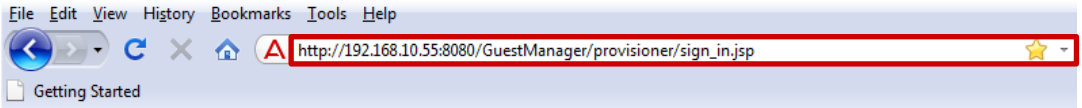
## 2.4 Verification

### 2.4.1 Internal Provisioners Authentication

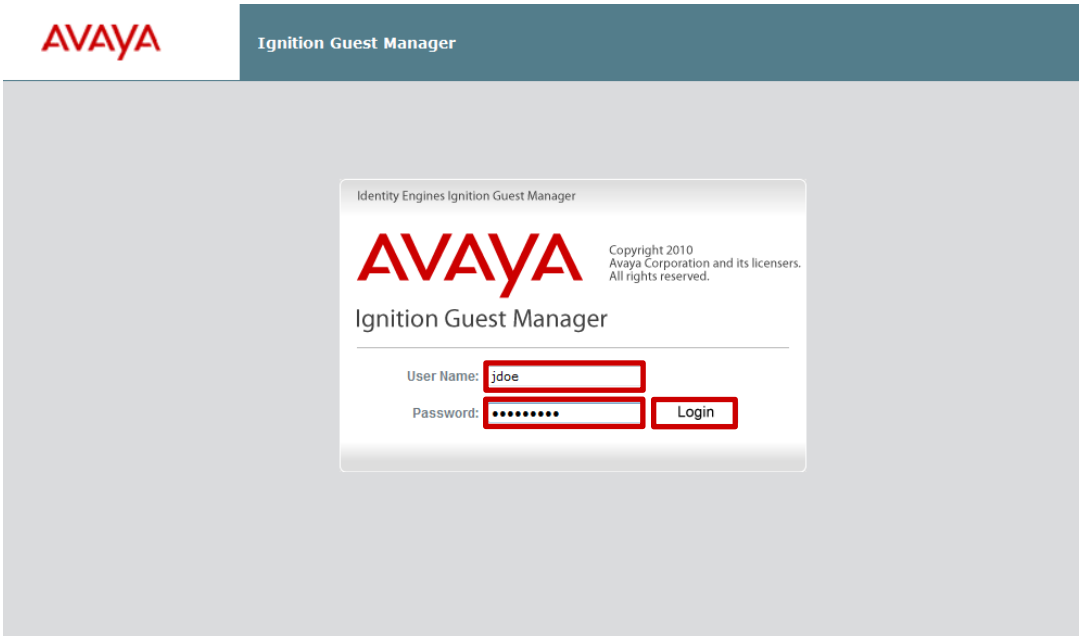
Internal provisioning users are authenticated against the Ignition Servers internal user store. The following steps verify the internal provisioning user created in ***Section 2.2.5*** can successfully authenticate to the Ignition Server and is assigned the correct provisioning group assignments:

**1 Using a supported web browser connect to the administrative portal on the Ignition Guest Manager server:**

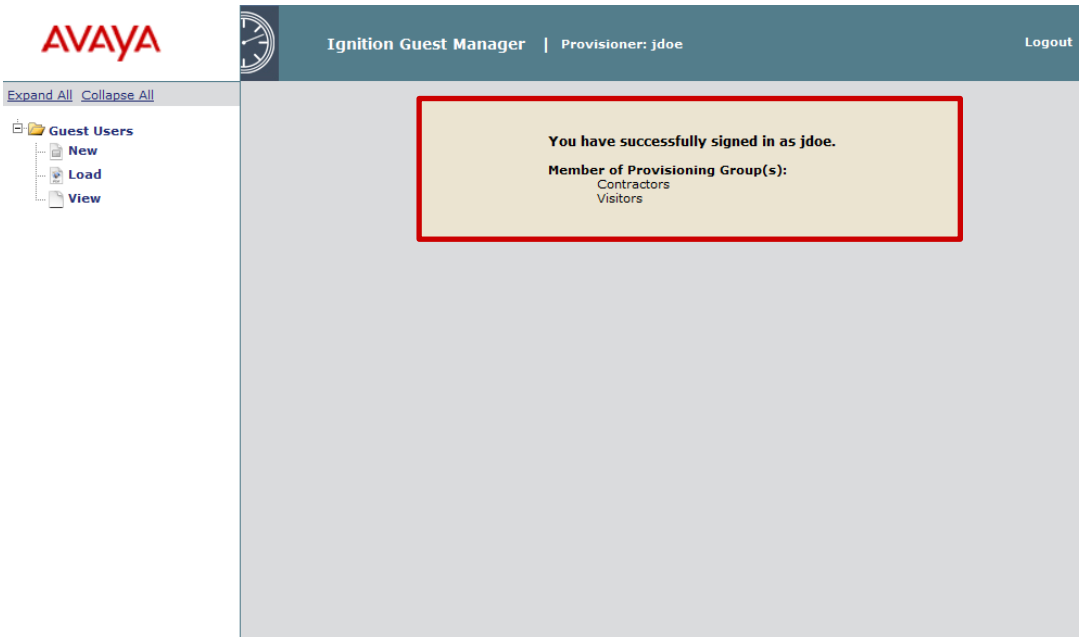
- **HTTP URL Example: *http://<guest-manager-ip-address>:8080/GuestManager/***
- **HTTPS URL Example: *https://<guest-manager-ip-address>:8080/GuestManager/***



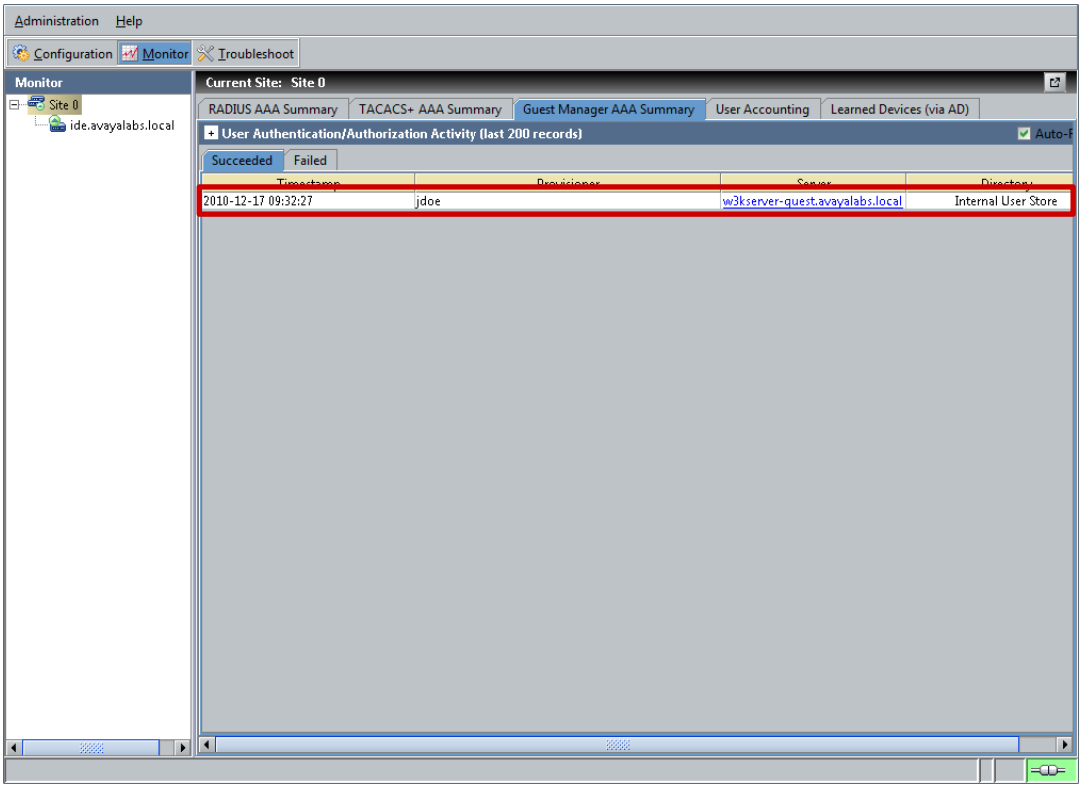

**2 Enter the *User Name* and *Password* of the internal provisioning account created in section 2.2.5 then click *Login*:**



**3 Once successfully authenticated a dialog message will be displayed which provides the *Provisioning Groups* names the internal provisioning user is assigned:**




**4 You can verify authentication using the *Ignition Dashboard* application by clicking *Monitor* > *Site-Name* > *Guest Manager AAA Summary* > *Succeeded*:**

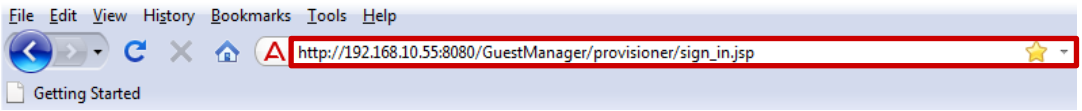


## 2.4.2 External Provisioners Authentication

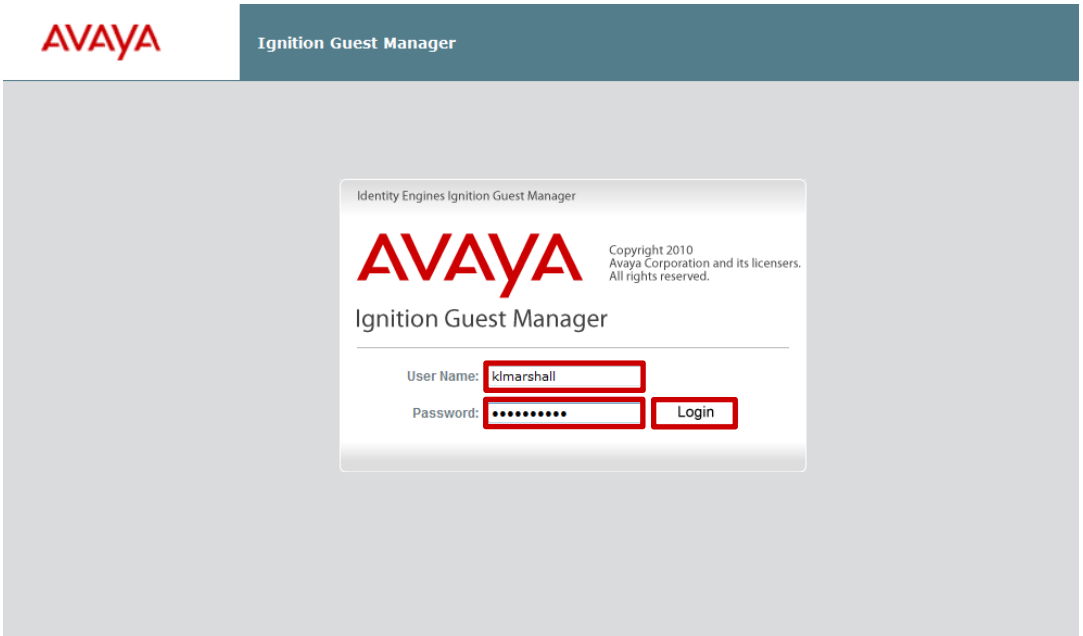
External provisioning users are authenticated through the Ignition Server but their credentials are stored externally in an Active Directory or LDAP user store. The following steps verify the external provisioning users can authenticated to the Ignition Server and are assigned the correct provisioning group assignments:

**1 Using a supported web browser connect to the administrative portal on the Ignition Guest Manager server:**

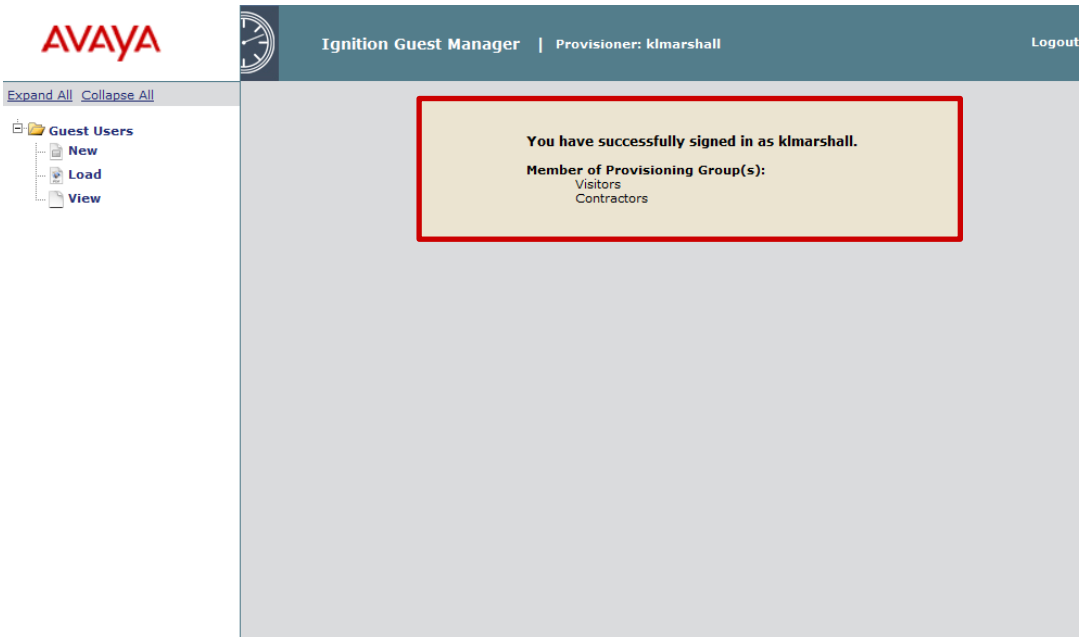
- **HTTP URL Example: *http://<guest-manager-ip-address>:8080/GuestManager/***
- **HTTPS URL Example: *https://<guest-manager-ip-address>:8080/GuestManager/***



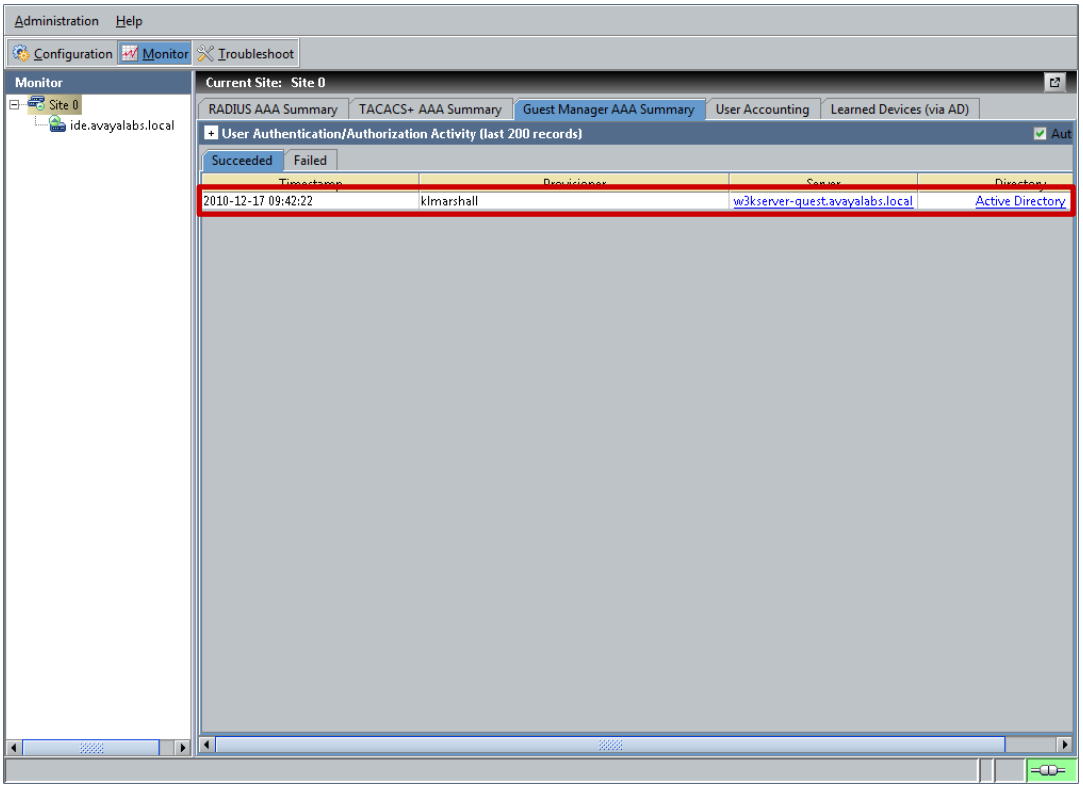

**2 Enter the *User Name* and *Password* of the Active Directory or LDAP account then click *Login*:**



**3 Once successfully authenticated a dialog message will be displayed which provides the *Provisioning Groups* names the internal provisioning user is assigned:**




**4 You can verify authentication using the *Ignition Dashboard* application by clicking *Monitor* > *Site-Name* > *Guest Manager AAA Summary* > *Succeeded*:**



### 2.4.3 Captive Portal Authentication

Wireless users are authenticated using a captive-portal that captures and redirect users to a captive-portal login page hosted on the Avaya 8100 series Wireless Controller. When guest users associate to the AVAYA-GUEST wireless service, all traffic is blocked except DHCP, DNS and HTTP.

When the user launches their browser and attempts to connect to an external web-site, the WC 8180 captures the session and redirects the user to a login page hosted on the Avaya 8100 series Wireless Controller. The user must agree to the terms and conditions as well as enter valid credentials before being permitted access to the network:

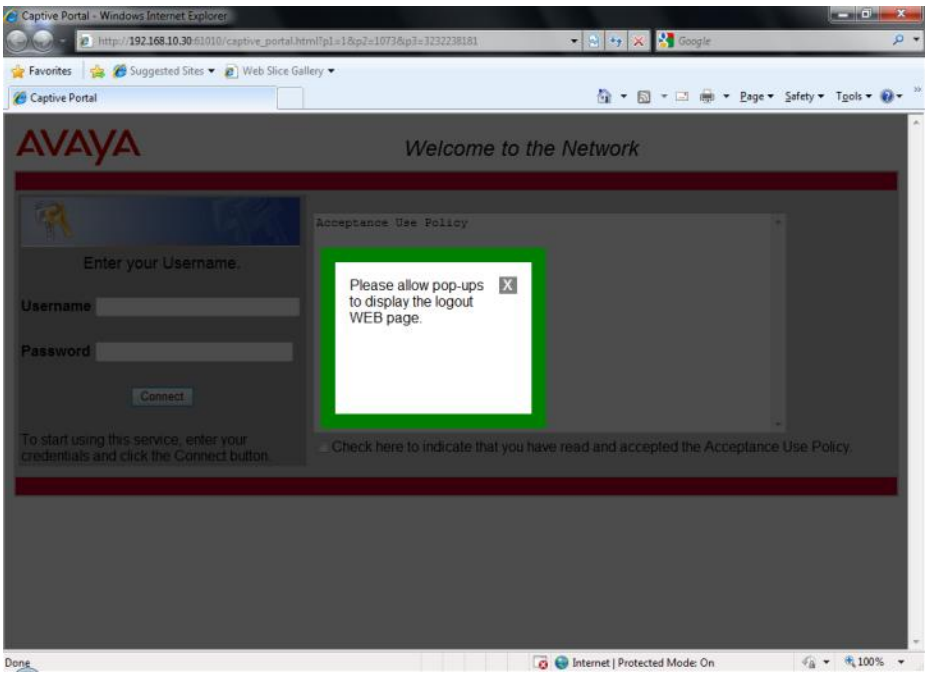
**1 Associate a wireless client to the *AVAYA-GUEST* SSID. Obtain and IP address from the DHCP server and verify IP addressing:**

```
C:\>ipconfig


Wireless LAN adapter Wireless Network Connection:


   Connection-specific DNS Suffix  . : guest.avayalabs.local
   Description . . . . . . . . . . . : Dell Wireless 1490 Dual Band WLAN Mini-Card
   Physical Address. . . . . . . . . : 00-1F-3A-02-AC-82
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   IPv4 Address. . . . . . . . . . . : 192.168.14.101(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : Friday, January 07, 2011 2:21:25 PM
   Lease Expires . . . . . . . . . . : Saturday, January 08, 2011 3:50:20 PM
   Default Gateway . . . . . . . . . : 192.168.14.1
   DHCP Server . . . . . . . . . . . : 192.168.14.1
   DNS Servers . . . . . . . . . . . : 208.67.222.222
                                       208.67.220.220
   Primary WINS Server . . . . . . . : 192.168.0.254
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

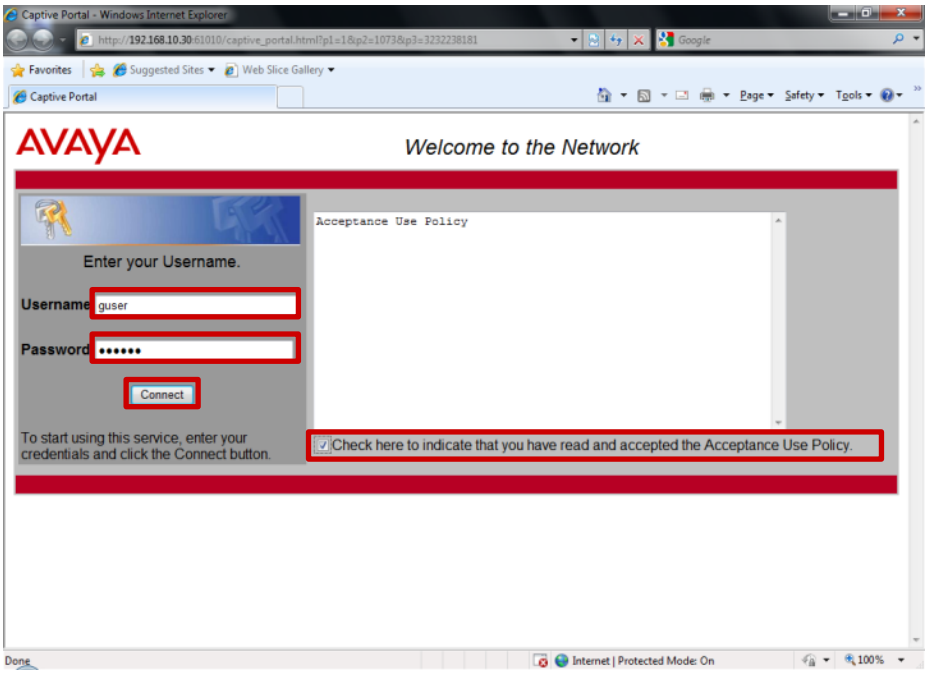
In pre-authenticated state, the device will only be able to obtain an IP address, resolve hostnames and communicate with the captive portal. No other communications will be permitted.

In this example DHCP for the guest users is being provided by the firewall. The firewall has a DHCP scope defined with a pool of addresses in the 192.168.14.0/24 range which provides its guest interface IP address as the default gateway. Public DNS servers are also provided.

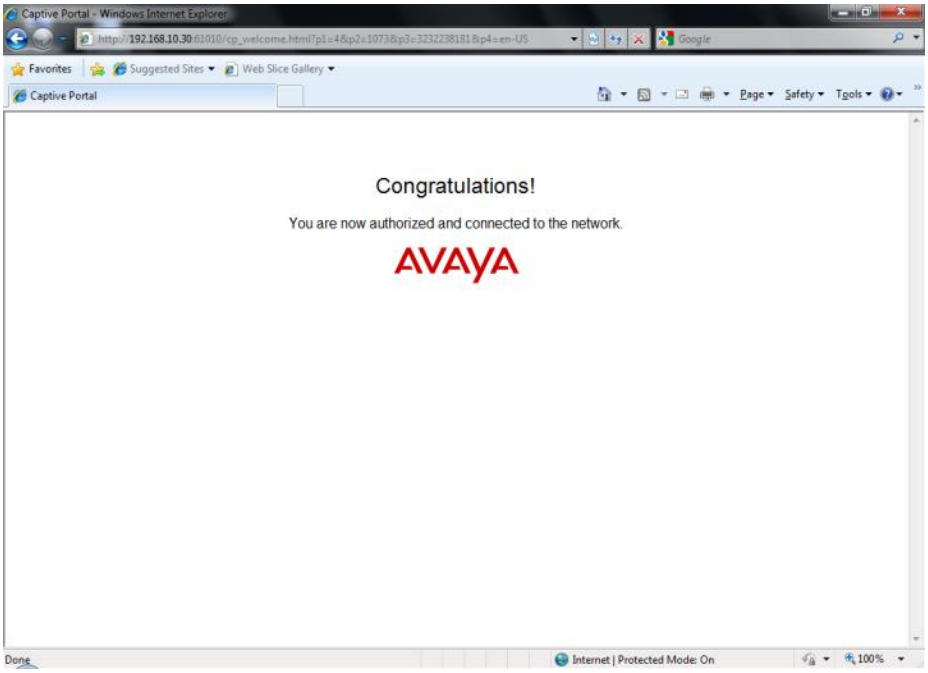
**2 Launch a web-browser and attempt to connect to an external server (example *http://www.avaya.com*). The browsers session will be captured by the Avaya 8100 series Wireless Controller and redirected to the captive portal login page:**




**3 Enter a valid *Username* and *Password* that you provisioned using the Ignition Guest Manager application. Check the option *Check here to indicate that you have read and accepted the Acceptance User Policy* then click *Connect*:**

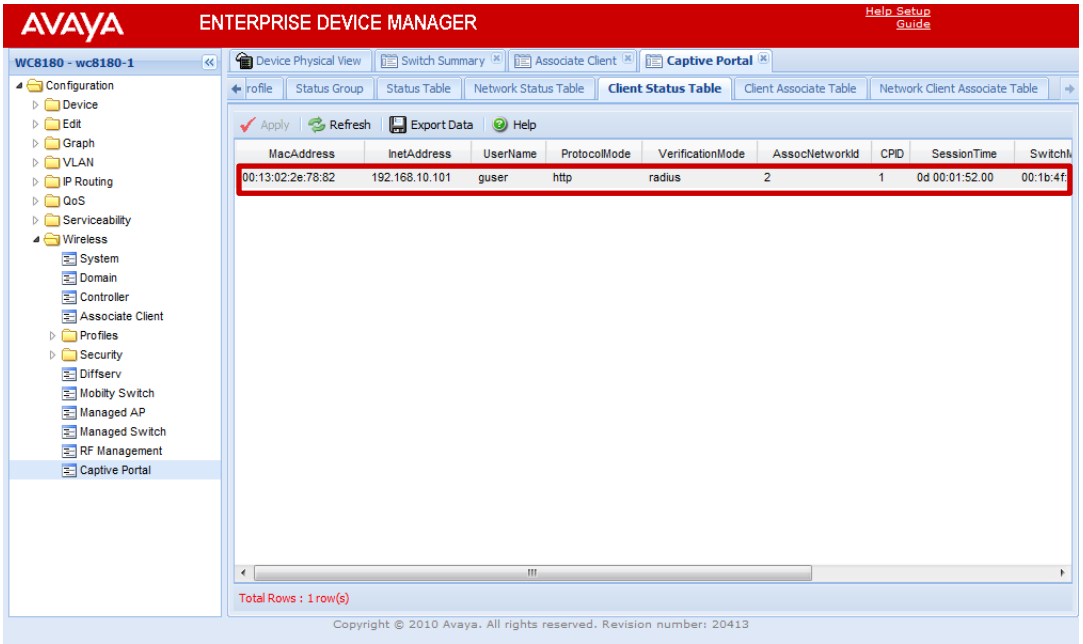


## 4 Once successfully authenticated the following message will be displayed:

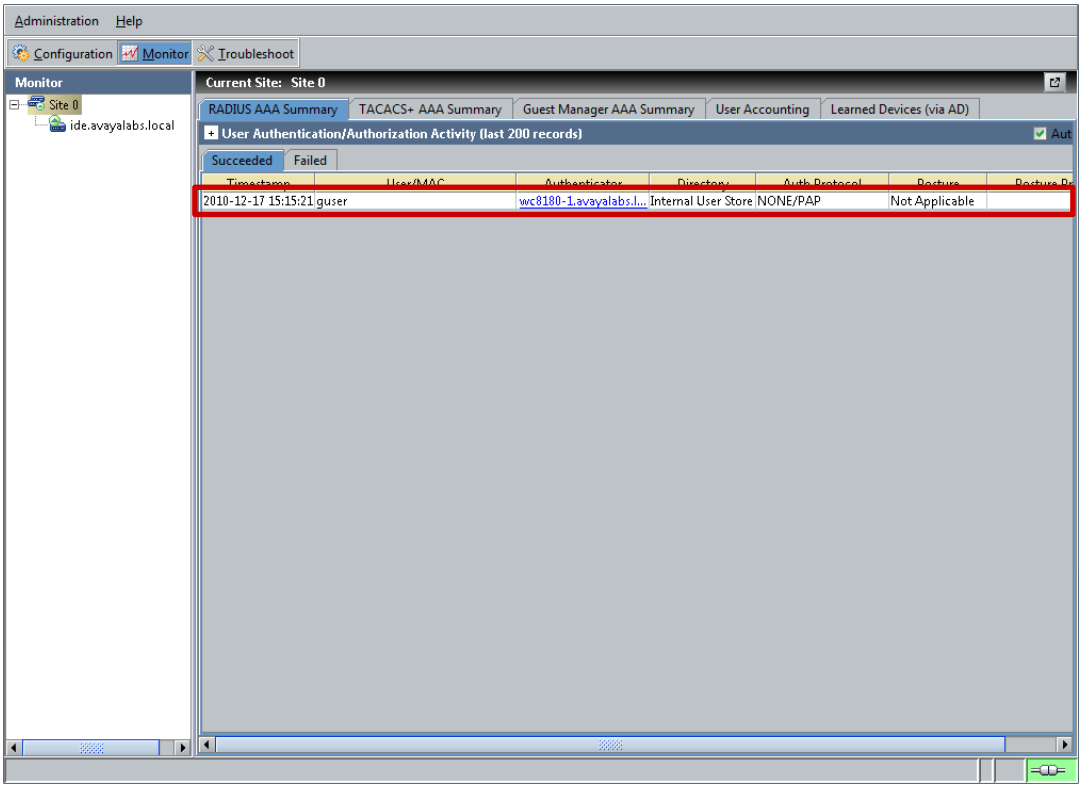



## 5 View the captive portal sessions on the Avaya 8100 series Wireless Controller using the AACLI or EDM:

```
WC8180# show wireless captive-portal client status

Total number of clients: 1

--------------------------------------------------------------------------------
     Client            Client         Associated       Mobility         Status
  MAC Address        IP Address       Controller         VLAN
----------------- --------------- --------------- --------------- -------------
00:13:02:2E:78:82 192.168.10.101  192.168.10.30   VLAN10          Authenticated
--------------------------------------------------------------------------------
```




**6 You can verify authentication using the *Ignition Dashboard* application by clicking *Monitor* > *Site-Name* > *RADIUS AAA Summary* > *Succeeded*:**



# 3. Reference Documentation

| Publication Number | Document Title |
|---|---|
| NN47280-500 | Avaya Identity Engines Ignition Server Configuration Guide |
| NN47280-501 | Avaya Identity Engines Ignition Server Guest Manager Configuration |
| NN47251-102 | Avaya WLAN 8100 Fundamentals |
| NN47251-500 | Avaya WLAN 8100 Configuration - WC 8180 (CLI) |
| NN47251-501 | Avaya WLAN 8100 Configuration - WC 8180 (GUI) |