Two factor authentication for RADIUS appliances

The LoginTC RADIUS Connector is a complete two-factor authentication virtual machine appliance packaged to run within your corporate network. The LoginTC RADIUS Connector allows your RADIUS-speaking corporate resources (e.g. VPNs) to use LoginTC for the most secure two-factor authentication. Supported devices include:

- Cisco ACS / ISE / ISR / Catalyst / IPSec VPN/ SSH Network Device Access
- Citrix NetScaler Gateway (XenDesktop/XenApp)
- Palo Alto GlobalProtect / IPSEC VPN
- Dell SonicWALL NSA, TZ and Aventail (including Mobile Connect)
- VMware, Sohpos, F5, Pulse Secure, Array Networks, NetMotion

Any other appliances which have configurable RADIUS authentication are supported.

Since the LoginTC RADIUS Connector can speak RADIUS and LDAP it fits seamlessly into your existing setup without significant disruption. The appliance is configured to provide authentication to your existing RADIUS-speaking device and brokers first and second factor user authentication. The optional first factor is against an already existing LDAP, Active Directory or RADIUS device. The second factor is a secure authentication request to the user’s mobile or desktop device.

The Appliance is very easy to configure with a rich web-based interface much like LoginTC Admin.

Authentication Flow

1. A user attempts access with their existing VPN client with username / password
2. A RADIUS authentication request is sent to the LoginTC RADIUS Connector
3. The username / password is verified against an existing first factor directory (LDAP, Active Directory or RADIUS)
4. An authentication request is made to LoginTC Cloud Services
5. Secure push notification request sent to the user’s mobile or desktop device
6. User response (approval or denial of request) sent to LoginTC Cloud Services
7. The LoginTC RADIUS Connector polls until the user responds or a timeout is reached
8. RADIUS Access-Accept sent back to VPN
9. User is granted access to VPN
Prerequisites

Before proceeding, please ensure you have the following:

**RADIUS Domain Creation**

Create a RADIUS domain in LoginTC Admin. The domain represents a service (e.g. VPN) that you want to protect with LoginTC. It will contain token policies and the users that access your service.

If you have already created a LoginTC domain for your LoginTC RADIUS Connector, then you may skip this section and proceed to Installation.

1. Log in to LoginTC Admin
2. Click **Domains:**
3. Click **Create Domain:**
4. Enter domain information:
The LoginTC RADIUS Connector runs CentOS 6.5 with SELinux. A firewall runs with the following open ports:

<table>
<thead>
<tr>
<th>Port</th>
<th>Protocol</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>TCP</td>
<td>SSH access</td>
</tr>
<tr>
<td>1812</td>
<td>UDP</td>
<td>RADIUS authentication</td>
</tr>
<tr>
<td>1813</td>
<td>UDP</td>
<td>RADIUS accounting</td>
</tr>
<tr>
<td>8888</td>
<td>TCP</td>
<td>Web interface</td>
</tr>
<tr>
<td>80</td>
<td>TCP</td>
<td>Package updates (outgoing)</td>
</tr>
<tr>
<td>123</td>
<td>UDP</td>
<td>NTP, Clock synchronization (outgoing)</td>
</tr>
</tbody>
</table>

**Note: Username and Password**

`logintc-user` is used for SSH and web access. The default password is `logintcradius`. You will be asked to change the default password on first boot of the appliance and will not be able to access the web interface unless it is change.

The `logintc-user` has sudo privileges.

**Configuration**

Configuration describes how the appliance will authenticate your RADIUS-speaking device with an optional first factor and LoginTC as a second factor. Each configuration has 4 Sections:

1. **LoginTC**

   This section describes how the appliance itself authenticates against LoginTC Admin with your LoginTC organization and domain. Only users that are part of your organization and added to the domain configured will be able to authenticate.

2. **First Factor**

   This section describes how the appliance will conduct an optional first factor. Either against an existing LDAP, Active Directory or RADIUS server. If no first factor is selected, then only LoginTC will be used for authentication (since there are 4-digit PIN and Passcode options that unlock the tokens to access your domains, LoginTC-only authentication this still provides two-factor authentication).

3. **Passthrough**

   This section describes whether the appliance will perform a LoginTC challenge for an authenticating user. The default is to challenge all users. However with either a static list or Active Directory / LDAP Group you can control whom gets challenged to facilitate seamless testing and rollout.

4. **Client and Encryption**

   This section describes which RADIUS-speaking device will be connecting to the appliance and whether to encrypt API Key, password and secret parameters.

**Data Encryption**
It is strongly recommended to enable encryption of all sensitive fields for both PCI compliance and as a general best practice.

The **web interface** makes setting up a configuration simple and straightforward. Each section has a **Test** feature, which validates each input value and reports all potential errors. Section specific validation simplifies troubleshooting and gets your infrastructure protected correctly faster.

**First Configuration**

Close the console and navigate to your appliance **web interface** URL. Use username `logintc-user` and the password you set upon initial launch of the appliance. You will now configure the LoginTC RADIUS Connector.

Create a new configuration file by clicking **+ Create your first configuration:**

**LoginTC Settings**

Configure which LoginTC organization and domain to use:
Configuration values:

- **api_key**: The 64-character organization API key
- **domain_id**: The 40-character domain ID

The API key is found on the LoginTC Admin Settings page. The Domain ID is found on your domain settings page.

Click **Test** to validate the values and then click **Next**:

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**First Authentication Factor**

Configure the first authentication factor to be used in conjunction with LoginTC. You may use Active Directory / LDAP or an existing RADIUS server. You may also opt not to use a first factor, in which case LoginTC will be the only authentication factor.
Active Directory / LDAP Option

Select Active Directory if you have an AD Server. For all other LDAP-speaking directory services, such as OpenDJ or OpenLDAP, select LDAP:

Configuration values:

<table>
<thead>
<tr>
<th>host</th>
<th>Host or IP address of the LDAP server</th>
<th>ldap.example.com or 192.168.1.42</th>
</tr>
</thead>
<tbody>
<tr>
<td>port (optional)</td>
<td>Port if LDAP server uses non-standard (i.e., 389/636)</td>
<td>389/4000</td>
</tr>
<tr>
<td>bind_dn</td>
<td>DN of a user with read access to the directory</td>
<td>cn=admin,dc=example,dc=com</td>
</tr>
<tr>
<td>bind_password</td>
<td>The password for the above bind_dn account</td>
<td>password</td>
</tr>
<tr>
<td>base_dn</td>
<td>The top-level DN that you wish to query from</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dc=example, dc=com</td>
<td></td>
</tr>
<tr>
<td>attr_username</td>
<td>The attribute containing the user’s username</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sAMAccountName or uid</td>
<td></td>
</tr>
<tr>
<td>attr_name</td>
<td>The attribute containing the user’s real name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>displayName or cn</td>
<td></td>
</tr>
<tr>
<td>attr_email</td>
<td>The attribute containing the user’s email address</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mail or email</td>
<td></td>
</tr>
<tr>
<td>Group Attribute (optional)</td>
<td>Specify an additional user group attribute to be returned the authenticating server.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4000</td>
<td></td>
</tr>
<tr>
<td>RADIUS Group Attribute (optional)</td>
<td>Name of RADIUS attribute to send back</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Filter-Id</td>
<td></td>
</tr>
<tr>
<td>LDAP Group (optional)</td>
<td>The name of the LDAP group to be sent back to the authenticating server.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SSLVPN-Users</td>
<td></td>
</tr>
<tr>
<td>encryption (optional)</td>
<td>Encryption mechanism</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ssl or startTLS</td>
<td></td>
</tr>
<tr>
<td>cacert (optional)</td>
<td>CA certificate file (PEM format)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/opt/logintc/cacert.pem</td>
<td></td>
</tr>
</tbody>
</table>

Click **Test** to validate the values and then click **Next**.

**Existing RADIUS Server Option**

If you want to use your existing RADIUS server, select **RADIUS**:

![LoginTC RADIUS Connector 2.1.0](image)

**Configuration values:**

<table>
<thead>
<tr>
<th>host</th>
<th>Host or IP address of the RADIUS server</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>radius.example.com or 192.168.1.42</td>
</tr>
<tr>
<td>port (optional)</td>
<td>Port if the RADIUS server uses non-standard (i.e., 1812)</td>
</tr>
<tr>
<td></td>
<td>6812</td>
</tr>
</tbody>
</table>
**RADIUS Vendor-Specific Attributes**

Common Vendor-Specific Attributes (VSAs) found in the FreeRADIUS dictionary files will be relayed.

Click **Test** to validate the values and then click **Next**.

**Passthrough**

Configure which users will be challenged with LoginTC. This allows you to control how LoginTC will be phased in for your users. This flexibility allows for seamless testing and roll out.

For example, with smaller or proof of concept deployments select the **Static List** option. Users on the static list will be challenged with LoginTC, while those not on the list will only be challenged with the configured **First Authentication Factor**. That means you will be able to test LoginTC without affecting existing users accessing your VPN.

For larger deployments you can elect to use the **Active Directory or LDAP Group** option. Only users part of a particular LDAP or Active Directory Group will be challenged with LoginTC. As your users are migrating to LoginTC your LDAP and Active Directory group policy will ensure that they will be challenged with LoginTC. Users not part of the group will only be challenged with the configured **First Authentication Factor**.

**No Passthrough (default)**

Select this option if you wish every user to be challenged with LoginTC.

**Static List**

Select this option if you wish to have a static list of users that will be challenged with LoginTC. Good for small number of users.
LoginTC challenge users: a new line separated list of usernames. For example:

```
jane.doe
jane.smith
john.doe
john.smith
```

**Active Directory / LDAP Group**

Select this option if you wish to have only users part of a particular Active Directory or LDAP group to be challenged with LoginTC. Good for medium and large number of users.

**Configuration values:**
<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LoginTC challenge auth groups</td>
<td>Comma separated list of groups for which users will be challenged with LoginTC</td>
<td>SSLVPN-Users or two-factor-users</td>
</tr>
<tr>
<td>host</td>
<td>Host or IP address of the LDAP server</td>
<td>ldap.example.com or 192.168.1.42</td>
</tr>
<tr>
<td>port (optional)</td>
<td>Port if LDAP server uses non-standard (i.e., 389/636)</td>
<td>4000</td>
</tr>
<tr>
<td>bind_dn</td>
<td>DN of a user with read access to the directory</td>
<td>cn=admin,dc=example,dc=com</td>
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<tr>
<td>bind_password</td>
<td>The password for the above bind_dn account</td>
<td>password</td>
</tr>
<tr>
<td>base_dn</td>
<td>The top-level DN that you wish to query from</td>
<td>dc=example,dc=com</td>
</tr>
<tr>
<td>attr_username</td>
<td>The attribute containing the user’s username</td>
<td>sAMAccountName or uid</td>
</tr>
<tr>
<td>attr_name</td>
<td>The attribute containing the user’s real name</td>
<td>displayName or cn</td>
</tr>
<tr>
<td>attr_email</td>
<td>The attribute containing the user’s email address</td>
<td>mail or email</td>
</tr>
<tr>
<td>encryption (optional)</td>
<td>Encryption mechanism</td>
<td>ssl or startTLS</td>
</tr>
<tr>
<td>cacert (optional)</td>
<td>CA certificate file (PEM format)</td>
<td>/opt/logintc/cacert.pem</td>
</tr>
</tbody>
</table>

**Configuration Simplified**

If **Active Directory / LDAP Option** was selected in **First Authentication Factor** the non-sensitive values will be pre-populated to avoid retyping and potential typos.

Click **Test** to validate the values and then click **Next**.

**Client and Encryption**

Configure RADIUS client (e.g. your RADIUS-speaking VPN):
Client configuration values:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>A unique identifier of your RADIUS client</td>
<td>CorporateVPN</td>
</tr>
<tr>
<td>ip</td>
<td>The IP address of your RADIUS client (e.g. your RADIUS-speaking VPN)</td>
<td>192.168.1.44</td>
</tr>
<tr>
<td>secret</td>
<td>The secret shared between the LoginTC RADIUS Connector and its client</td>
<td>bigsecret</td>
</tr>
</tbody>
</table>

**Data Encryption**

It is strongly recommended to enable encryption of all sensitive fields for both PCI compliance and as a general best practice.

Click **Test** to validate the values and then click **Save**.
Testing

When you are ready to test your configuration, create a LoginTC user (if you haven’t already done so). The username should match your existing user. Provision a token by following the steps:

When you have loaded a token for your new user and domain, navigate to your appliance web interface URL:

Click Test Configuration:
Enter a valid username and password; if there is no password leave it blank. A simulated authentication request will be sent to the mobile or desktop device with the user token loaded. Approve the request to continue:

Congratulations! Your appliance can successfully broker first and second factor authentication. The only remaining step is to configure your RADIUS device!

If there was an error during testing, the following will appear:
In this case, click See logs and then click the /var/log/logintc/authenticate.log tab to view the log file and troubleshoot:

**RADIUS Client Configuration**

Once you are satisfied with your setup, configure your RADIUS device to use the LoginTC RADIUS Connector as its RADIUS authentication source. Set the RADIUS timeout to 60 seconds to allow enough time for LoginTC authentication responses.

For your reference, the appliance web interface Settings page displays the appliance IP address and RADIUS ports:
User Management

Create users in LoginTC corresponding to your AD/LDAP users and provision them tokens. There are several options for managing your users within LoginTC:

For more details about user management and provisioning, visit the User Management guide.

Troubleshooting

No Network Connection

1. First ensure that your LoginTC RADIUS Connector is configured to have a virtual network adapter on eth0
2. Ensure that the virtual network adapter MAC address matches the one in the file /etc/sysconfig/network-scripts/ifcfg-eth0
3. Restart the networking service:

   ```
   service network restart
   ```

4. If you notice the error that eth0 is not enabled, then check driver messages for more information:

   ```
   dmesg | grep eth
   ```

5. It's possible that the virtualization software renamed the network adapter to eth1. If this is the case, rename /etc/sysconfig/network-scripts/ifcfg-eth0 to ifcfg-eth1.

   ```
   mv /etc/sysconfig/network-scripts/ifcfg-eth0 /etc/sysconfig/network-scripts/ifcfg-eth1
   ```
Open the file and update the `DEVICE="eth0"` line to `DEVICE="eth1"`

**Not Authenticating**

If you are unable to authenticate, navigate to your appliance web interface URL and click **Status**:

Ensure that all the status checks pass. For additional troubleshooting, click **Logs**:

**Email Support**

For any additional help please email support@cyphercor.com. Expect a speedy reply.