

Illumio®

Version 24.2

LW-VEN

Version 1.1.0

LW-VEN Installation and Configuration Guide



Legal Notices

Copyright © 2024 Illumio 920 De Guigne Drive, Sunnyvale, CA 94085. All rights reserved.

The content in this documentation is provided for informational purposes only and is provided "as is," without warranty of any kind, expressed or implied of Illumio. The content in this documentation is subject to change without notice.

For legal information, see https://www.illumio.com/legal-information.

Open source software utilized by the Illumio and their licenses, see Open Source Licensing Disclosures

Product Version

PCE Version: 24.2

For the complete list of Illumio components compatible with Core PCE, see the Illumio Support portal (login required).

For information on Illumio software support for Standard and LTS releases, see Versions and Releases on the Illumio Support portal.



LW-VEN Requirements and Limitations

This section covers the LW-VEN's setup operations, requirements, limitations, and caveats.

The LW-VEN software installs the Illumio Legacy Windows VEN Service on your supported legacy Windows machines. Once installed, the Illumio Legacy Windows VEN Service:

- Enforces policy received from the PCE.
- Consumes CPU as needed to calculate or optimize and apply the firewall while remaining idle in the background as much as possible.

You control the Illumio Legacy Windows VEN Service's operations through the PCE web console or from the command line on the Windows machine on which the LW-VEN is installed.

Set-up Sequence

When run, the Illumio Legacy Windows VEN Service automatically does the following:

- 1. Checks whether this solution is supported.
- 2. Installs and pairs an LW-VEN on your legacy Windows Servers.
- 3. Creates a workload on the PCE to represent your legacy Windows Servers as a managed workload. A secured workload is known as a managed workload.
- 4. When running, the service:
 - Requests policy from the PCE as follows: after the LW-VEN sends a heart-beat to the PCE every five minutes, if there are any policy updates, the LW-VEN requests them from the PCE. If there are no policy updates, the LW-VEN performs a tamper check on its local policy to ensure that it hasn't been changed.
 - Applies the Illumio firewall rules obtained from the PCE to the Windows workload.

If the Illumio Legacy Windows VEN Service fails, Windows restarts it automatically.



Requirements

- IllumioLWVENInstaller.exe
- Illumio Policy Compute Engine (PCE) release 23.2.20 or later.
- 32-bit or 64-bit Microsoft Windows Server 2003 Service Pack 1 & Service Pack 2 and Windows 2008 Service Pack 1 & Service Pack 2
- .NET Framework 4.0.0 (minimum required; versions 5.0 and later are not supported)
- A dedicated local user account with admin privileges for installing and modifying the Windows firewall, running the service, and issuing the illumio-lwven-ctl commands.

IMPORTANT:

You must disable the User Access Control (UAC) feature if it is enabled on the legacy Windows Server machines on which you plan to install the Illumio Legacy Windows VEN Service. Otherwise, you will not be able to install the LW-VEN on the machine. UAC is a Windows security feature that prevents unauthorized changes to the operating system.

When sending requests to the PCE the LW-VEN performs peer certificate validation by validating the certificate against the generally available cert.pem file provided in the Illumio LW-VEN Service\certs directory. If you need to add extra certificate validations, add the appropriate .pem files to the \certs directory before activating the LW-VEN.

Limitations and Caveats

Take careful note of the following limitations and caveats.

Item	Windows 2003 Server SP1 & SP2	Windows 2008 Server SP1 & SP2
Enforcement modes	Support for:	Support for:
	Idle mode	Idle mode
	Full Enforcement	Visibility mode
	If you change the Enforcement Mode from Full to Idle , the Illumio	Selective Enforce- ment



Item	Windows 2003 Server SP1 & SP2	Windows 2008 Server SP1 & SP2
	Legacy Windows VEN Service removes all Illumio policy from the Windows server. If you switch back to Full enforcement, the policy is reapplied to the workload. Although the Visibility and Selective options are not supported with Win 2003 SP1/SP2 servers, the options still appear in the PCE UI in the Enforcement drop-down menu on	• Full Enforcement If you change the Enforcement Mode from Full to Visibility or Selective, the PCE creates an Illumio ALLOW ALL rule, effectively allowing all non-blocked traffic.
still appear in the PCE UI in the Enforcement drop-down ment each Workload's details page. change the Enforcement mode Full to Visibility or Selective, the VEN ignores the policy and lost event to the Windows Event Leand the PCE.		NOTE: In Selective Enforcement mode, the Windows 2008 Server firewall applies all block rules before apply- ing any allow rules. This behavior is opposite to how the standard Illu- mio VEN works on other Win- dows sys- tems.
Flow Reporting	Depending on the amount of traffic passing through the firewall, enabling firewall logging may impact the server's performance. If this occurs, try enabling flow reporting for only brief periods of time only as necessary (minimum 1 hr) and then disable it. See Enable flow reporting.	



Item	Windows 2003 Server SP1 & SP2	Windows 2008 Server SP1 & SP2
Inbound/Outbound Rules	Support for:Inbound rules only	Support for:Inbound rulesOutbound rules
Policy Rules Limitations	 Port & protocol rules only One rule per port/protocol. For example, if you specify a rule that includes a port range, multiple single rules are created, one per port. Support for programming only a list of IP addresses and/or CIDR blocks per rule. (IP ranges are converted to CIDR blocks.) The LWVEN always attempts to merge IP addresses into the most compact CIDR addresses possible. If the Illumio Legacy Windows VEN Service is uninstalled, all Illumio rules are removed from the firewall. Applying a policy with a large port range may cause the Windows firewall to become unresponsive or respond slowly to any firewall command. Rules exceeding 1000 ports are split into multiple rules. 	 Port & protocol rules only Specifying a rule that includes a port range results in a single rule, but ports are shown in a comma-separated list instead of a port range. IP ranges. (CIDR blocks are converted to an IP range.) The LW-VEN always attempts to merge IP addresses into the most compact IP ranges possible. If the Illumio Legacy Windows VEN Service is uninstalled, all Illumio rules are removed from the firewall. Applying a policy with a large port range may cause the Windows firewall to become unresponsive or respond slowly to any firewall com-



Item	Windows 2003 Server SP1 & SP2	Windows 2008 Server SP1 & SP2
		mand.
		Rules exceeding 1000 ports are split into multiple rules.
Matching rules	 Exact Matches (port/protocol and all IPs match) Customer rule remains enforced; 	 Exact Matches (port/- protocol and all IPs match)
	Illumio rules are not applied.	Customer rule
	 Partial Matches (port/protocol match but only some or no IP addresses match) 	remains enforced; Illu- mio rules are not applied.
	If a customer rule exists for the same port & protocol as an Illumio rule, the Illumio rule is applied and the customer rule is overwritten.	 Partial Matches (port/protocol match but only some or no IP addresses match)
		If a customer rule exists for the same port & protocol as an Illumio rule, the customer rule is disabled and the Illumio rule applies. If the customer suspends or uninstalls the Illumio LW-VEN Service, their partially matching rules, if any, remain disabled.
Rule character limits	Windows limits the size of rules to approximately 8K characters. Rules that exceed 8K characters will cause the entire policy to be rejected and a message to be logged in the Window's Event Log.	Windows limits the size of rules to approximately 8K characters. Rules that exceed 8k characters are split into multiple rules. No limit on the number of rules is



Item	Windows 2003 Server SP1 & SP2	Windows 2008 Server SP1 & SP2
		enforced.
Error handling	Log messages are written to local logs; errors and warnings are also written to the Windows Event Log and to the PCE.	
LW-VEN and work- load names in the PCE	After you activate an LW-VEN, the LW-VEN workload appears in the PCE UI with the same name as the Server's hostname.	
User interface	 The Upgrade button that appears on the VEN page in the PCE Web Console doesn't apply to this solution. Clicking the button has no effect. 	
	 If you unpair the LW-VEN through Unpair on the LW-VEN's detail pag Ports option is supported. 	•



Install and Configure the Illumio LW-VEN Service

This section details how to install and configure the Illumio LW-VEN Service.

Procedure

Perform the following steps.

STEP 1: (Recommended) Back Up the Existing Firewall Configuration

Before you install the Illumio LW-VEN Service, Illumio recommends that you back up your legacy Window's existing firewall configuration in case it becomes necessary to revert back to it. For example, reversion would be necessary if you uninstall the Illumio LW-VEN Service.

STEP 2: Create or Find a Pairing Profile with the Appropriate Settings

IMPORTANT:

Note that this solution differs from the standard VEN pairing process in that it doesn't use the pairing script available in the pairing profile. Only a properly-encoded pairing key is required to pair the LW-VEN installed on your legacy Windows server with the PCE.

All pairing keys are generated from a Pairing Profile and are encoded with settings from that profile. The pairing key you obtain or generate for this solution must have been generated from a pairing profile with the appropriate settings for your type of Windows server.

Minimum required pairing profile settings

Operating System	Supported Enforcement Modes	Supported Enforcement Node Type
Win 2003 Server SP1 & SP2	Idle (recommended)Full	Server VEN
Win 2008 Server SP1 & SP2	• Idle	Server VEN

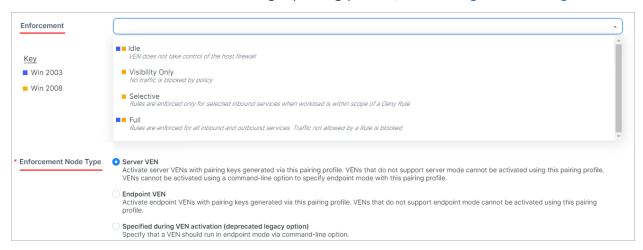


Operating System	Supported Enforcement Modes	Supported Enforcement Node Type
	 Visibility 	
	• Selective	
	• Full	

Option 2.1 - Create a new Pairing Profile

To create a new pairing profile, go to **Servers & Endpoints > Pairing Profiles** and configure settings using this image and the table above as a guide.

For more information about creating a pairing profile, see Configure a Pairing Profile.

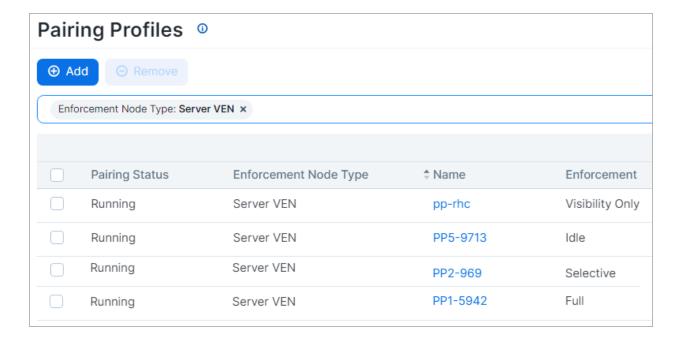


Option 2.2 - Find an existing Pairing Profile with the proper settings

To identify an existing pairing profile with the appropriate settings for your server type, go Servers & Endpoints > Pairing Profiles and find a profile with Enforcement Node Type: Server VEN and the Enforcement mode(s) appropriate for your Windows Server.

You can filter the list by Enforcement Node Type.





STEP 3: Obtain or Generate a Pairing Key in the PCE Web Console

Choose one of the following options to obtain a pairing key.

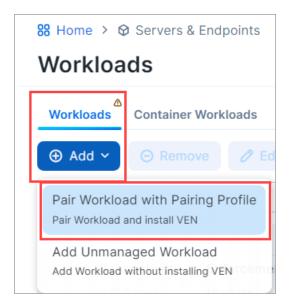
IMPORTANT:

As detailed in STEP 2: Create or Find a Pairing Profile with the Appropriate Settings, make sure that the pairing key you obtain or generate for this solution was generated from a pairing profile with the appropriate settings for your type of Windows server.

Option 3.1 - Copy a Pairing Key from an existing Pairing Profile

- 1. Expand the **Servers & Endpoints** section in the left navigation.
- 2. Click Workloads.
- 3. Click Add, and then choose Pair Workload with Pairing Profile.





4. In the **Pick a Pairing Profile** drop-down list, select the pairing profile you identified previously that has the appropriate settings for your legacy Windows server (see STEP 2: Create or Find a Pairing Profile with the Appropriate Settings.).



5. Scroll down to Pairing Scripts and copy and preserve the Key for use in STEP 4.



IMPORTANT:

Don't copy the pairing script available in the pairing profile. Pairing scripts are not used with this solution.

Option 3.2 - Generate a new Pairing Key from an existing Pairing Profile

- 1. Expand the **Servers & Endpoints** section in the left navigation.
- 2. Click Pairing Profiles.



- 3. Click an existing pairing profile that has the appropriate settings for your legacy Windows server (see STEP 2: Create or Find a Pairing Profile with the Appropriate Settings.)
- 4. Click Generate Key.
- 5. Scroll down to Pairing Scripts and copy and preserve the Key for use in STEP 4.

Option 3.3 - Create a new Pairing Profile

- 1. Expand the **Servers & Endpoints** section in the left navigation.
- 2. Click Pairing Profiles.
- 3. Click **Add** and configure the settings appropriate for your legacy Windows server as described in Option 2.1 Create a new Pairing Profile.
- 4. Click Save.
- 5. Open the Pairing Profile you just created.
- 6. Scroll down to Pairing Scripts and copy and preserve the Key for use in STEP 4.

IMPORTANT:

Don't copy the Pairing Script. The script is not used in this solution.

STEP 4: Install, configure, and pair the Illumio Legacy Windows VEN Service on a legacy Windows server

IMPORTANT:

- You must disable the User Access Control (UAC) feature if it is enabled on the legacy Windows Server machines on which you plan to install the Illumio Legacy Windows VEN Service. Otherwise, you will not be able to install the LW-VEN on the machine. UAC is a Windows security feature that prevents unauthorized changes to the operating system.
- You must install and activate the Illumio Legacy Windows VEN Service from a dedicated local admin account.
- Only the Illumio LW-VEN Service account user can run the LW-VEN service and issue illumio-lwven-ctl commands.



- 1. Obtain the IllumioLWVENInstaller.exe file and place it on the Windows server. (Recommended location: C:\Users\Administrator). The installer is available on the Illumio Support portal.
- 2. Perform one of the following installation + activation options:

Option 4.1 - Respond to prompts	Option 4.2 - No prompts (useful for automated processes)
Launch the file from a command line or by double-clicking the file.	Enter the following command at a command prompt:
Select Destination Location	<pre>C:\Users\Administrator>illumio-lwven-ctl activ- atemanagement-server <pcehost:port>activ- ation-code <pairing-key> [passsword <account- password="">]</account-></pairing-key></pcehost:port></pre>
<pre>depends on whether the legacy Windows server is a 32-bit or 64-bit machine. o 32-bit machines: (C:\Program Files\Illumio LW-VEN Service) o 64-bit machines: (C:\Program Files(x86)\Illumio LW-VEN Service)</pre>	IMPORTANT: For a fully automated activation process, make sure to include thepassword option and specify the user account password. Otherwise, you are prompted to enter a password to complete the activation.
 Select Additional Tasks Make sure the path option is selected, and then click Next. 	Messages appear:Resolving: <pcehost></pcehost>Pairing to PCE <pcehost:port></pcehost:port>
 Ready to Install Click Install. 	POST /org/0/agents/activateActivation Complete
 Complete the Setup Wizard Select "Launch illumio- lwven-ctl activate" 	
 Click Finish. The certs.pem file is added immediately after you click Finish. 	
(b) Activate and configure	
Complete the Setup Wizard	



Option 4.1 - Respond to prompts	Option 4.2 - No prompts (useful for automated processes)
 Select "Launch illumio- lwven-ctl activate" 	
 Click Finish. The certs.pem file is added immediately after you click Finish. 	
• Enter hostname: port for PCE address: Enter the subdomain (s) and domain of your PCE's web address and port (for example, example.illum.io:8443).	
 Enter pairing key for LW-VEN: Paste the pairing key that you obtained in STEP 3 and then press Enter. 	
Messages appear:	
<pre>o Pairing to <pcehost:port></pcehost:port></pre>	
 Activation Complete 	
 You are prompted to enter the user account password, which is necessary to run the Illumio LWVEN Service. 	

- 3. Go to Servers & Endpoints > Workloads > VENs.
- 4. Click the name of the LW-VEN you added.
- 5. Confirm the following on the LW-VEN's details page:
 - **NODE** section:
 - Hostname: <your-Windows-Server-Computer-Name>
 - Enforcement Node Type: See STEP 2: Create or Find a Pairing Profile with the Appropriate Settings.
 - Version: 1.0.0



- - OS: LW-VEN 1.0.0
- 6. You can perform the following operations on the LW-VEN (For details, see the VEN Administration Guide):
 - Edit the LW-VEN
 - Generate a support bundle (see Generate a Support Report).
 - Mark the LW-VEN Suspended

NOTE:

This should be necessary only if you issue the illumio-lwven-ctl suspend command and receive a message indicating that the LW-VEN failed to inform the PCE of its suspension.

Unpair the LW-VEN

NOTE:

If you unpair the LW-VEN through the PCE UI by clicking **Unpair** on the LW-VEN's detail page, only the **Open All Ports** option is supported.

STEP 5: Create Security Policy

In the PCE web console, create label-based policies for your Windows Server 2003 SP1 & SP2 and Windows Server 2008 SP1 & SP2 workloads. For information on how to create policies, see the Security Policy Guide.



Manage and Troubleshoot the Illumio LW-VEN

This section covers Illumio using, managing, and troubleshooting the LW-VEN.

Paring and Activation Concepts

The terms "activation" and "pairing" indicate the same function from different perspectives; namely, putting the workload under managed control by the PCE:

- The LW-VEN sees itself as activated or deactivated.
- The PCE sees an LW-VEN as paired or unpaired.

		Pairing and Activating the LW-VEN
1	The LW-VEN is installed.	The PCE remains unaware the LW-VEN is present.
2	The LW-VEN and the PCE are paired.	The PCE uses a pairing key (activation code) to pair with the LW-VEN. After pairing, the PCE becomes aware of the LW-VEN.
3	The LW-VEN is activated.	The LW-VEN uses an activation code generated by the PCE. After activation, the LW-VEN is ready to function.

Unpairing, deactivating, and uninstalling the LW-VEN

Here's how these operations work in this solution:

- Unpairing the LW-VEN through the PCE UI or by issuing illumio-lwven-ctl unpair unpairs the LW-VEN from the PCE and uninstalls the LW-VEN software.
- **Deactivating** the LW-VEN by issuing illumio-lwven-ctl deactivate unpairs the LW-VEN from the PCE but doesn't remove the LW-VEN software.
- Uninstalling the Illumio Legacy Windows VEN Service through the Windows Control Panel > Programs and Features:
 - Unpairs the LW-VEN from the PCE
 - Removes the Workload object from the PCE
 - Removes Illumio firewall rules and any working files
 - Uninstalls the LW-VEN software from the Windows server



View the Illumio rules applied to the native firewall

Illumio rules applied to the Windows Server's native firewall begin with Illumio. For example: IllumioInTcp14000Permit

There are two ways to view Illumio firewall rules:

- Generate a Support Report and look in the Firewall.txt file.
- Issue a command on the Windows Server:

NOTE:

Using the findstr filter shows only the first line of the rule, not the entire rule.

- Win 2003 SP1/SP2: C:\Users\Administrator> netsh firewall show portopening enable | findstr /R "Illumio.*"
- Win 2008 SP1/SP2: C:\Users\Administrator> netsh advfirewall firewall show rule name=all | findstr /R "Illumio.*"

Enable flow reporting

The LW-VEN can enable the native Windows Firewall log on your legacy Windows server, which allows the LW-VEN to generate and log traffic flow information for ingestion by the PCE. After ingesting the log information, the PCE displays it in its Map and Traffic views to help you gain insights about and create policy for your business applications.

IMPORTANT:

Depending on the amount of traffic passing through the firewall, enabling firewall logging may impact the server's performance. If this occurs, try enabling flow reporting for only brief periods of time only as necessary (minimum 1 hr) and then disable it.

How it works

- 1. Enable Windows Firewall logging on your legacy Windows server by issuing a command on the LW-VEN.
- 2. The LW-VEN parses the firewall log every 10 minutes and pushes the extracted information to the PCE.



- 3. The PCE ingests the information from the LW-VEN and makes it available in its Visualization tools (Map, Traffic, and Mesh views).
- 4. Use the information to create, update, verify, and troubleshoot Illumio policy rules for your legacy Windows server.

Procedure

STEP 1: Issue the Flow Reporting command

1. From a command prompt on the Windows server, navigate to:

C:\Program Files (x86)\Illumio LW-VEN

2. Issue the following command and the appropriate option to enable, disable, or check status:

illumio-lwven-ctl flow-reporting [enable|disable|status]

STEP 2: View traffic flows and create policy

Visualize traffic

The PCE's visualization tools allow you to see the traffic flowing to and from your Windows server so you can configure and troubleshoot the Illumio policies you need to protect your applications. For details, see the Visualization Guide.

Create policy

Illumio Core relies on security policies to secure communications between work-loads. Security policies are configurable sets of rules that protect network assets from threats and disruptions. For guidance designing an Illumio security policy, including creating rulesets and rules, see the Security Policy Guide.

Tamper detection

The Illumio Legacy Windows VEN Service performs tamper checking whenever it heartbeats to the PCE (every 5 minutes) and discovers that there is no new policy to apply. Whenever the policy update check occurs, the Illumio Legacy Windows VEN Service checks whether the last-applied Illumio policy on the legacy server differs from the last applied policy from the PCE. If a difference is detected, the Legacy Windows VEN Service reverts the policy to the intended state so that the correct PCE security policy is enforced.



Generate a Support Report

You can generate the Illumio Legacy Windows VEN Service support report. It includes the following information:

Firewall.txt: Lists all the rules currently programmed in the native Windows Firewall.

- Logs specifying:
 - When policy was last received
 - When policy was last applied and what was applied
 - System information (output of the systeminfo command)

Generate a Support Report

Option 1:

This is the simplest way to generate a report.

NOTE:

This option assumes that the LW-VEN is in a running state on the Windows Server.

- 1. Go to Servers & Endpoints > Workloads > VENs
- 2. Click the name of the LW-VEN you added to go to its details page.
- 3. Click Generate Support Bundle.

The bundle is uploaded to the PCE (may take up to 10 minutes).

Option 2:

This option is useful if the LW-VEN is stopped due to a major problem.

• Issue illumio-lwven-ctl support-report

The location of the report on the Windows server is returned after you issue the command. This report is not sent to the PCE.

Logs

The Illumio LW-VEN Service logs its operations locally on the Windows Server. Logs are rotated from primary to backup when their size reaches 10MB or once every 24 hours at midnight.

Location



- 32-bit: C:\Program Files\Illumio LW-VEN Service\logs
- 64-bit: C:\Program Files (x86)\Illumio LW-VEN Service\logs

Archive

By default, seven log archives are preserved on the workload.

Commands

You can issue the following commands to interact with the Illumio LW-VEN Service.

NOTE:

- Only the Illumio LW-VEN Service account user can issue illumiolwven-ctl commands.
- All commands include the prefix illumio-lwven-ctl
- activate
- status
- restart
- stop
- start
- unpair

Removes the Illumio policy from the firewall, removes the LW-VEN from the PCE, and uninstalls the LW-VEN software from the Window's server. You can also uninstall the LW-VEN from the PCE by clicking Unpair for the appropriate LW-VEN on the PCE VEN page. With this unpairing method, it may take up to five minutes for the LW-VEN to be unpaired and uninstalled.

deactivate

Removes the Illumio policy from the firewall; removes the PCE objects from the PCE and from the Illumio LW-VEN Service; does not remove the LW-VEN software from the installation directory (in case you want to later re-activate the LW-VEN without having to install the LW-VEN package).

- support-report
- suspend

Suspends the Illumio LW-VEN Service and uninstalls Illumio policy from the firewall.



• unsuspend

Enables and starts the Illumio LW-VEN Service; retrieves and applies the latest PCE policy.

Troubleshooting

This section describes how to troubleshoot common issues.

Issue	Remediation
The Illumio Legacy Windows VEN Service stops. Problem receiving policy from the PCE.	Check logs: Windows Event Viewer Log Local Illumio logs
Problem applying policy to the workload created by the Illumio Legacy Windows VEN Service.	
Problem with the connection between the Illumio Legacy Win- dows VEN Service and the PCE.	The Illumio Legacy Windows VEN Service tries every five minutes to reconnect to the PCE.
Unable to install, stop, suspend, or unpair the Illumio Legacy Windows VEN Service.	These issues may be caused by the User Access Control (UAC) feature if it is enabled on your legacy Windows Server machines. UAC is a Windows security feature that prevents unauthorized changes to the operating system. Disable the User Access Control (UAC) feature if it is enabled.
Pairing the LW-VEN with the PCE fails; a message indicates that the pairing key was generated from a pairing profile with unsupported settings for this solution, such as the wrong Enforcement mode or Enforcement Node Type.	Obtain a properly-encoded pairing key (see STEP 2) and repeat STEP 3 and STEP 4.