

VectorLock[®]

The First Security System for Shapefiles

VectorLock is an ArcGIS[®] extension that enables organizations to protect geospatial data by controlling access to shapefiles. VectorLock is the first shapefile security system to:

- Limit how long shapefiles can be used
- Control user access and permissions
- Preserve the integrity of geospatial data

Whether you're sharing project files with contractors, protecting enterprise data integrity or selling proprietary datasets, VectorLock ensures that your geospatial data doesn't fall into the wrong hands. Designed to replace complicated and unenforceable license agreements, VectorLock uses file permissions and timed licenses to allow you to control access to sensitive data both inside and outside your organization.

VectorLock Use Cases

Before the introduction of VectorLock, securing geospatial data was not an easy task. Now the paradigm has shifted and geospatial data can be secured for as long as you want and to the degree that you choose. While this list does not include all possible applications, here are some common commercial, government and academic uses of VectorLock:

- As an internal security measure to protect sensitive geospatial data
- When sharing sensitive data for a limited time with independent contractors
- When selling vector format data with reoccurring annual license agreements
- To assure data integrity across various internal departments

VectorLock Security Measures

VectorLock employs a flexible, multi-tiered strategy to assure the highest level of security possible. To this end, VectorLock protects geospatial data by controlling:

1. *Access permissions* – the first layer of protection that is established to control access to VectorLock files is an organization's Identity. An organization's Identity is a unique string that is similar to a driver's license number. Every time a VectorLock file is created, an approved Identity is assigned to that file. Upon use, if the unique Identity of the user does not match the approved Identity of the VectorLock file, then access will be denied. During the licensing process, a list of approved computers can also be established. If a computer is being used that is not on this list, then access to VectorLock files will be denied. As a final layer of protection, a username and password can be established to enhance security.



2. *Length of access* – an important component of controlling access to data is assuring that the data is only used for the necessary duration. With VectorLock, licenses can be set to expire in as little as one day, or as long as a year or more. Once this date is reached, users cannot access the data unless they are provided with an updated license with a new expiration date.
3. *Data usage* – to assure that data is used in an appropriate manner, VectorLock files can be created with two permissions levels: read-only or edit. If data is created as read-only, then users cannot access the ArcGIS Editor Mode and the integrity of the data will thus be maintained.
4. *Data formats* – as a final layer of protection, there is no risk that other programs can access a VectorLock file as they are delivered in an encrypted format that can only be read in ArcMap with an installed VectorLock Toolbar.



VectorLock data restrictions interface.

VectorLock File Structure

While VectorLock files work just like Esri shapefiles inside of ArcMap, they have a unique file structure. A VectorLock file (.vlf extension) contains the core elements of an Esri shapefile packaged in an unreadable, encrypted file format. Inside the VectorLock file are these Esri shapefile elements: .shp; .shx; and – of particular concern – the .dbf. The .dbf file contains all the attributes that have been linked to an Esri shapfile and can be opened with any version of Microsoft Excel®. The .prj is left outside the .vlf so that users can easily determine the projection and datum of VectorLock files.

VectorLock Bundles contain one or more Esri shapefiles. Each shapefile in the Bundle is converted to a distinct VectorLock file with an associated .prj, if one exists to begin with. Data distributors then associate a VectorLock data license (.vll) with a particular Bundle and include the desired access and usage restrictions in the license file. Multiple VectorLock data licenses can be associated with the same Bundle so that this Bundle can be distributed to various organizations, each with different use restrictions and expiration dates. You can modify any VectorLock data license you create with new privileges, usage restrictions and/or an expiration date, and then redistribute this to your data consumers.



VectorLock Installation

VectorLock works with a Windows XP, Windows Vista or Windows 7 Operating System; and given its minimal memory and storage needs, runs smoothly on any computer that can handle ArcGIS. There are three components of VectorLock that function together to secure your geospatial data:

| Licensor Contact Info | |
|-----------------------|--------------------|
| First Name: | Andrew |
| Last Name: | Site Leader |
| Address: | 1111 Elm Drive |
| City: | San Diego |
| State: | California |
| Postal Code: | 12345 |
| Organization: | Company D |
| Department: | Site A |
| Email: | iteleader@companyD |
| Phone Number: | (111) 222-3333 |
| Fax Number: | |

Establishing an Identity.

manages access to them with customized licenses. Access to these protected VectorLock files can be given to other organizations – and even to specific users – with an established Identity for the necessary time period.

- **The License Manager** – manages an organization’s Identity and their VectorLock software licenses.
- **The ArcMap Toolbar** – an extension that integrates with ArcGIS 9.3 and later. The Toolbar allows users to view, edit and work with VectorLock files using traditional GIS workflows.
- **The Admin Program** – a stand-alone program that creates VectorLock files and

Created for organizations of all sizes, VectorLock supports fixed and integrated enterprise-wide installations. When running in fixed mode, each computer shares the same Identity but creates and stores VectorLock files and licenses locally. While in an enterprise install, computers also share an Identity but are able to store VectorLock files and licenses both locally and on the network so that all permitted users can access them.

Using VectorLock

All VectorLock users have access to the VectorLock ArcMap Toolbar. Standard license holders can open and work with VectorLock files in traditional ArcGIS workflows; while Advanced License holders can also edit these files. Users with the Admin Program included in their software license are able to create, package and then distribute the VectorLock Bundles they create. Every organization with VectorLock must assign a license administrator to manage their unique Identity. The Standard and Advanced versions of the ArcMap Toolbar are available free of charge from eMap; while the VectorLock Admin Program is sold by the seat with annual license agreements.



VectorLock ArcMap Toolbar

With the Toolbar, users can open VectorLock files licensed to their organization in ArcMap. Once loaded, VectorLock files are treated by ArcMap as it would any point, line or polygon Esri shapefile so that you can complete your typical GIS tasks; for instance, you can:

- Change the symbology and layer ordering
- Measure distances
- Create printable maps
- Work with any Arc Toolbox that exports Esri shapefiles

Esri shapefiles and VectorLock files work exactly the same when loaded in ArcMap. For example, users can combine VectorLock files and Esri shapefiles in Arc Toolbox functions (e.g. a merge, dissolve or union) without any encumbrance. When this is done, the output is a VectorLock file that maintains the exact same access and usage restrictions that are contained in the original VectorLock data license(s). At this time, VectorLock files are not recognized in ArcCatalog.



Loading a VectorLock file in ArcMap.

VectorLock Admin Program

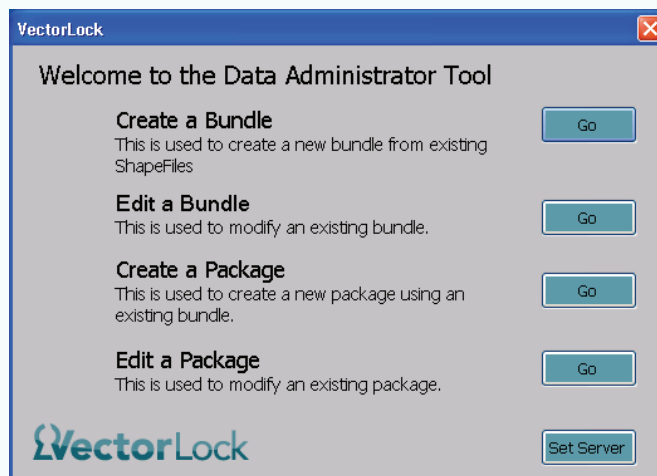
In order to create VectorLock files and then license them to approved users, the Admin Program is required. The Admin Program allows you, as an administrator, to apply various levels of protection to VectorLock files so that you can specifically control:

1. Who can open VectorLock files
 - *Organization Identity (required)* – to send a VectorLock bundle to a data consumer you must have the consumer's Identity file (.vli). An organization's Identity is shared through a VectorLock Identity file (.vli) which is created by their License Manager.
 - *Hosts (optional)* – if desired, access to VectorLock files can be restricted to a single computer or a set of computers within an organization. A list of possible hosts within an organization is shared via the VectorLock Identity file.
 - *Username/password (optional)* – to add an additional layer of security, a username and password can be required to access a VectorLock file. This username and password is established by the data distributor and can be as simple or as complex as you require.



2. How long approved users can access VectorLock files

- *Expiration date (required)* – access to VectorLock files can be limited to one day, set to never expire, or fixed to a specific time period in between. A calendar interface provides you with a clean method to enter your desired start and expiration dates.
- *Grace period (optional)* – if desired, the data distributor can add a 30, 60 or 90-day grace period to the expiration date. This will allow approved data consumers to renew their VectorLock data license(s) before they expire.



The VectorLock Admin interface.

3. What approved users can do with VectorLock files

- *Permissions (required)* – if Edit permissions are granted, then data consumers can edit VectorLock files in ArcMap's Editor Mode. Alternatively, data distributors can restrict the ability to edit VectorLock files by applying Read-Only permissions. These Read-Only permissions would apply to Advanced Toolbar users as well.

The Admin Program has functionality above and beyond the ability to create and manage VectorLock files and data licenses. As an administrator, you can:

- Convert the VectorLock files you create (and any derivatives of these files that are created in ArcMap by users) back to Esri shapefiles.
- Distribute VectorLock files with ease by creating a file with the Bundle, associated external files where applicable (e.g. the .prj file, etc.) and data licenses. These files, referred to as a VectorLock Package, can easily be converted to a ZIP file and sent to approved data consumers in a cohesive distribution format.
- Protect ESRI shapefiles to be assured that these files have not been altered during the duration of the project as the Admin Program can apply (and detect) an invisible watermark to Esri shapefiles. This watermark is degraded through edits and the use of ArcMap toolboxes so that you can determine if the integrity of the original Esri shapefile has been compromised.

For more information on VectorLock, please visit www.vectorlock.com, call us at (720) 470-7988 or send an email to vectorlock@emap-int.com.