

Welcome to ArcView® GIS. Whether you're an experienced user, or just getting started with ArcView GIS, this guide will introduce you to all of the new features and capabilities introduced in ArcView GIS since version 3.0.

Each new release exemplifies ESRI's commitment to enhancing the user experience with ArcView GIS. ArcView GIS 3.1 introduced a wizard-based approach towards accomplishing a variety of more sophisticated tasks such as advanced map production and advanced geoprocessing. Task wizards, along with other updates focusing on enhancing usability, leverage more of the power of ArcView GIS to help you more quickly and easily accomplish your Geographic Information Systems (GIS) objectives.

ArcView GIS 3.1 also introduced several new extensions, specifically designed to supplement your GIS requirements. In particular, ArcView GIS features a report writer extension that enables you to easily generate professional reports, including embedded maps and charts, that help you more successfully communicate the results of your GIS analysis.

ArcView GIS 3.2 provides both strategic updates to existing capabilities as well as new tools to facilitate your GIS operations. Specifically, ArcView GIS 3.2 includes an updated report writer (based on Seagate® Software's Crystal Reports™ 7.0), updated support for CAD data, and significant database access improvements for leveraging data stored in either Spatial Database Engine (SDE) or Object Database Connectivity (ODBC) databases.

ArcView GIS 3.2 also introduces a new shapefile projection utility, providing support for an extensive range of data projections and datum transformations, as well as support for several new data formats.

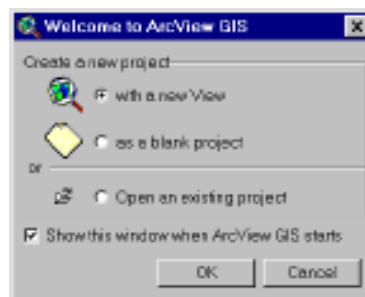
ESRI Data & Maps has also expanded to five CD's full of new and updated data.

This guide describes all of the new features and capabilities introduced for both ArcView GIS 3.1 and 3.2. Features introduced with ArcView GIS 3.2 can be easily identified on the Contents page by the 3.2 notation for each appropriate topic. For a complete description of the other features of ArcView GIS, please refer to the ArcView GIS user guide, "Using ArcView GIS", and the online help system.

Application level

Startup Screen dialog

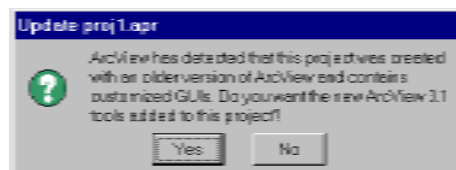
Created with new users in mind, this dialog gives quick and easy access to some of the most common tasks performed when first starting ArcView GIS. You can choose to create a new project (either blank or with a view) or to open an existing one. Clear the check box to stop the dialog from displaying when ArcView GIS opens.



If you do not want the dialog displayed again, delete the avstart.txt file in your TEMP directory (PC) or \$HOME directory (UNIX).

Project update for existing projects

When opening a project that has a customized interface (that is, the project uses one of ESRI's optional extensions, or contains changes to buttons, tools, or menus through the use of the Customize dialog box) and was created using ArcView GIS 3.0 or 3.0a, ArcView GIS will show the following message box:



To update your project, click Yes. The new Version 3.1 tools will be added to your interface. To leave your project as is, click No. Your project will not be updated.

Expanded date support

The supported range of the value of the Date class in ArcView GIS is no longer limited to 1970 to 2038. ArcView GIS now supports a Date range from 4715 B.C. to 9999 A.D. While dates beyond this range may work, they may not produce consistent results for all Avenue requests. For more information, refer to the 'Date (Class)' topic in the ArcView GIS online help index.

ArcView GIS will recognize dates from January 1, 0000 to December 31, 9999, in dBASE® files and from January 1, 1000, to December 31, 9999, in INFO™ files. Dates outside this range are given a value of null when retrieved from a table. Delimited text files store dates as strings that can be converted to dates with Avenue™. This means the delimited text file date range is the same as Avenue Date class range.

For more information regarding Year 2000 compliance, please visit our Web page at www.esri.com.

Improved support for ARC/INFO line symbols

Prior to 3.1, ArcView GIS could not display some types of ARC/INFO® line symbols—particularly custom symbols, such as multilayer or LineType Marker. Now most ARC/INFO line symbols can be used in ArcView GIS.

New TrueType fonts and symbols

New and enhanced symbol palettes include:

- Geology.avp: nearly 300 line and marker symbols for making U.S. Geological Survey (USGS) compliant geologic maps
- Weather.avp: additional weather frontline symbols
- Transp.avp: additional railroad line symbols
- Forestry.avp: line and marker symbols for creating forest fire-fighting maps

Import multilayer ARC/INFO line symbols

You can now import multilayer ARC/INFO line symbols into ArcView GIS. Even if you do not have access to ARC/INFO, you can create your own symbols using new Avenue classes added to support these new capabilities. For more information, refer to the 'symbols, how to create complex line symbols using Avenue' topic in the ArcView GIS online help index.

Import ARC/INFO LineType Marker symbols

You can also import LineType Marker and LineType VertexMarker from ARC/INFO symbol sets. The ARC/INFO marker symbols you import must already be defined using TrueType® fonts. (This capability became available in ARC/INFO 7.1.) You will need to create a new version of the TrueType font and name it appropriately so that ArcView GIS can match the information in the LineSet file and use the correct font and character for your font.

If the ARC/INFO symbol was created using the older IGL font technology, ArcView GIS will still import the symbol, including all of its properties, except the marker symbol. The current default marker symbol in ArcView GIS will be used, but you can use Avenue to substitute one that's more appropriate. For script examples, refer to the 'symbols, Avenue examples' topic in the ArcView GIS online help index.

New ways to customize the ArcView GIS application

Tools directory added to \$AVHOME

A directory called 'tools' has been added to your \$AVHOME directory. This directory contains the following:

- The extensions that load automatically when ArcView GIS starts (Startup Screen dialog, Create Buffers wizard, Label and Text tools, Neatline button, Shape Properties dialog, and TOC Style). If you don't want an extension to load automatically, you can move it to the \$AVHOME\ext32 directory—the extension will then be visible in the Extensions dialog. This provides a new way for developers to deliver functionality in ArcView GIS and load it automatically.
- A 'bitmaps' directory containing bitmaps used in the new interfaces that are based on Dialog Designer dialogs.

Extension .apr files available

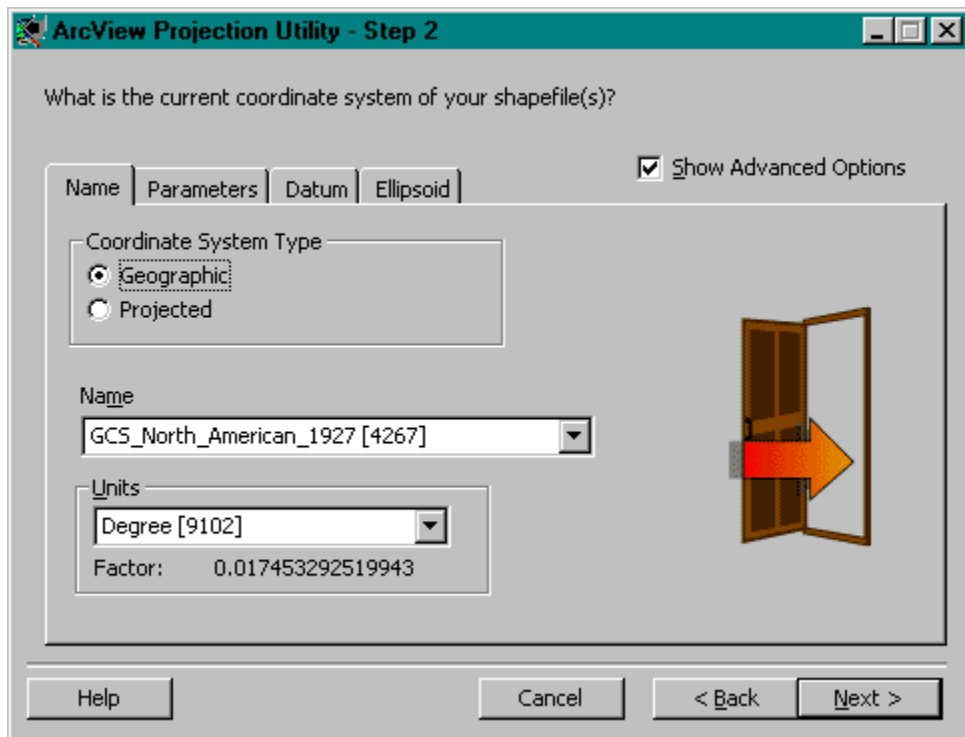
The \$AVHOME\samples\ext directory contains the project files used to create the extensions listed above. You can customize the extensions by editing the project files and creating new versions of the extensions.

3.2 ArcView GIS projection utility

ArcView GIS 3.2 includes a new utility that enables users to project shapefiles into a common coordinate system. The projection utility supports an extensive array of projections as well as datum conversions (including NAD27 to NAD83). The projection utility includes a wizard driven interface that guides you through the process of 3.2 selecting the input theme or data source to be projected, accepting default or setting custom projection parameters, and specifying the output theme or data source name. The utility then creates a new shapefile and a metadata file that contain information about the current projection parameters for the new shapefile.

The Shapefile Projection Utility can be launched from the ArcView GIS user interface as an extension, or run as a stand-alone utility.

The ArcView GIS projection utility is not available on UNIX®.




Views and themes

View properties

Background color

A new button on the View Properties dialog allows you to change the view's background color. From the View menu, choose Properties, and then click Select Color

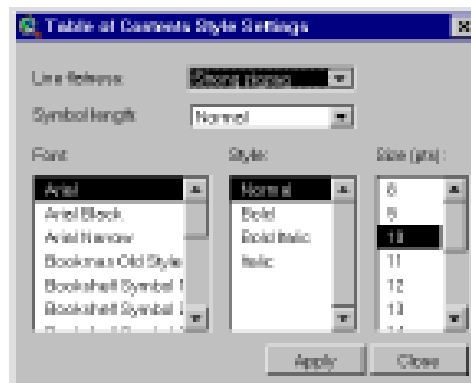
. The new background color will also be maintained when displayed in a layout.

Setting projection for already-projected data

When you are adding projected data as a theme, ArcView GIS will detect whether it might be projected and prompt you to set your view's projection. You are not prompted if the extent of themes is beyond the standard geographic coordinates.

TOC Style

A new menu choice, TOC Style, has been added to the View's View menu. TOC Style lets you change the following display settings of the Table of Contents (TOC): line flatness (degree to which the line symbols in the legend are flat), symbol length (the length of the line symbol in the TOC), and TOC text symbol (how text in a legend appears).

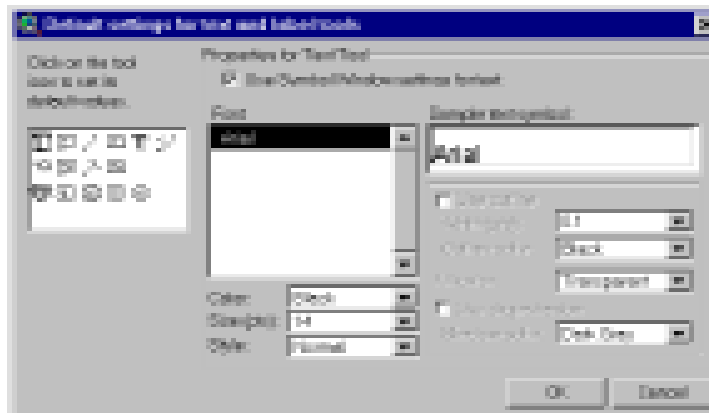


Label and text tools

Default settings for text and label tools dialog


ArcView GIS 3.1 upgrades the Label tool and the Text tool as tool menus with additional options for placing labels and text in a view or layout. These menus are now expanded to support the following new capabilities: labeling with a leader line pointing to a feature, labeling using banners, labeling using callouts, labeling with a background and drop shadow, and labeling highways with standard highway shield symbols.

Default settings can be changed using the new Default settings for text and label tools dialog, accessible from the Graphics menu. When you click on one of the icons, options associated with the tool appear in the menu.



A sample extension for autolabeling more than one theme is also available in this release.

Spline text tool

A new Spline text tool  with the ability to align text or position it along curved lines has been added in this release. The tool is presented as an option on the Text tool menu. After indicating where you want text drawn (by clicking in your view or layout), use the Spline Text Properties dialog to enter, align, and draw your text.

Convert shapefiles to projected units

For projected views, Convert to Shapefile will now ask you if you want the new shapefile to be created in projected units. Previously, Convert to Shapefile only output the new shapefile in decimal degrees for projected views. (For nonprojected views, the new shapefile was and still will be created in the units of the base data.)

Adding themes

Adding already-projected data to a projected view

Add Theme will now warn you if you try to add already-projected data to a projected view (unless you are adding images). The data will be added to the view anyway, but it may not display properly, as you can't view already-projected data in a projected view.

ESC cancels directory scan for Add Theme

ESC cancels directory scan for Add Theme. This allows you to immediately stop ArcView GIS from reading all the directories. For example, if you have a folder with forty folders in it, and you want to go to the third in the list, wait for ArcView GIS to display the first three folders, then press ESC. Now double-click on the third folder in the list.

Map and distance units automatically set

When adding a theme, if ArcView GIS detects that your data is in decimal degrees, it will automatically set the map and distance units for you.

New View menu options

Manage Data Sources under View menu

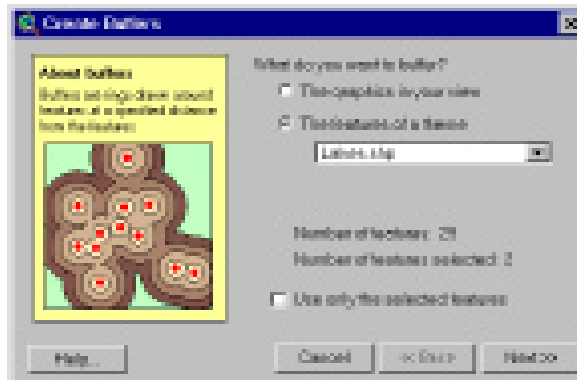
A new menu choice, Manage Data Sources, has been added to the View's File menu. Manage Data Sources lets you copy, rename, and delete shapefiles.

Save Project As and Extensions under File menu

Save Project As and Extensions have been added to the View's File menu to make these options more accessible. (They have also been added to the interfaces of the other document types as well, such as the Layout's File menu, the Project's File menu, and the Table's File menu.)

Create Buffers wizard

Accessed from the View's Theme menu, this wizard provides an easy-to-use set of panels for creating buffers. Using the panels, you will be able to select what and how to buffer, set buffer options, and specify where output should be saved.



Views can be exported into JPEG format

Views can now be exported into JPEG format.

ESC stops drawing of themes

Pressing ESC will immediately stop the drawing of themes without clearing the view's display. (To support this functionality, the ESC accelerator to turn off all themes has been removed.)

Data integration utilities



SDTS Data Import

ArcView GIS 3.2 includes a new data import utility that will import Spatial Data Transfer Standard (SDTS) raster and point data and creates ESRI GRID files and ArcView GIS point shapefiles respectively.



DXF Export

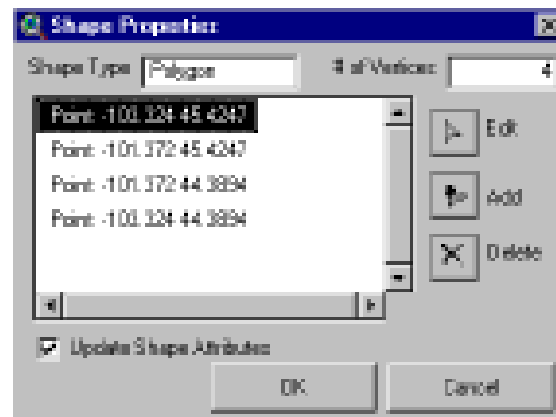
ArcView GIS 3.2 includes a data conversion utility providing shape to DXF output.

For more information regarding SDTS Data Import or DXF Export, please see the 'What's New' book in the online help system.

Creating and editing spatial data

Shape Properties dialog

This dialog was added to ArcView GIS to support the interactive addition, deletion, and editing of shape vertices. The main dialog identifies the type of shape, number of vertices, and presents a list of vertices within a shape. You can choose to add a vertex to a shape or select multiple vertices and delete them. The dialog is available from a right-click popup menu when a shape is selected and editable.



Snap tolerance cursor

When either general or interactive snapping is turned on, you now have the option of displaying a circle representing the snap tolerance with the cursor as you create polylines, polygons, or edit vertices. This is known as the snap tolerance cursor. If general snapping is turned on, the circle represents the general snap tolerance. If interactive snapping is also turned on, the circle will change to the interactive snap tolerance when you choose an interactive snap rule. By default, the snap tolerance cursor is turned on when snapping is turned on. You can turn the snap tolerance cursor off in the Editing panel of the Theme Properties dialog or by using the Show/Hide Snap Tolerance Cursor toggle on the View's popup menu.

For more information about the snapping environment in ArcView GIS, refer to the 'snapping' topic in the ArcView GIS online help index.

Introducing measured and 3D shapes

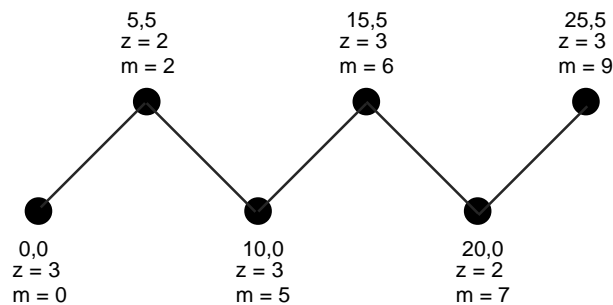
ArcView GIS 3.1 provides support for measured and 3D data by extending existing ArcView GIS shape classes and providing an Avenue API for accessing the measure and elevation values.

This means that data created by users of the ArcView 3D Analyst extension can be displayed and queried in 2D by all users of ArcView GIS 3.1.

What are measured and 3D shapes?

ArcView GIS has always stored geometric shapes using x,y coordinates. Points are recorded as a single x,y coordinate pair, lines as a series of ordered x,y coordinates, and areas (polygons) as a series of x,y coordinates defining a set of line segments that have the same start and end points.

ArcView GIS has extended the way it stores shapes. Instead of simply storing x,y coordinates that define a shape, a shape can additionally store a measure value 'm' and/or an elevation value 'z' at each x,y. Therefore, one or more (x,y,m), (x,y,z), or (x,y,z,m) coordinates can represent each geometric feature.



To learn more about extended shapes and special considerations for Avenue programmers, refer to the ArcView GIS online help 'What's new' topic, 'Support for measured and 3D shapes'.

Improved support for dynamic segmentation

All dynamic segmentation functionality available for coverage route systems in previous versions of ArcView GIS is now available on measured PolyLine shapefiles (that is, a PolyLineM or a PolyLineZ with the optional measure values attached).

The extended dynamic segmentation functionality includes the following:

- The DynName class now accepts a measured PolyLine shapefile FTab on the Make request.
- The Add Event Theme dialog now recognizes measured PolyLine shapefiles—that is, event themes can be defined on measured shapes.
- The FTab requests ReturnLocation and ReturnRouteMeasure now work on measured PolyLine shapefiles.
- The Export request on the FTab class can now convert an ARC/INFO coverage route system into a measured (PolyLineM) shapefile.

Tables

What's new for SQL Connect

With PC versions of ArcView GIS, error messages returned from an ODBC driver are now appended to a file called ODBC.errlog located in the ArcView GIS home directory. Error messages associated with incorrect login information, select statement syntax errors, or attempting to perform an invalid database operation are normally returned from a driver. If the ODBC.errlog file does not exist, you will get a message stating that the file has been created the first time a driver returns an error message. Below is an example of an error message that may appear in this file.

```
Call to SQLPrepare received error ODBC API function called
Received: SQL_ERROR Return code from the ODBC function
Return code: -1
```

```
State: S0022 ODBC error code—If you have ODBC API documentation, you can retrieve more
information about the problem by looking up this SQL State.
Error: [INTERSOLV][ODBC Oracle driver][Oracle]ORA-00904: invalid column
name Error code and error message from the database
```

```
File: ..\sql\ntcur.c ArcView source code reference
Line: 313
```

Please also see 'Database Access' in the Extension section of this booklet.


Printing and layouts

Neatline button

A neatline is a line that defines the map's frame and a border is composed of an additional line or lines which are parallel to it. They are often used to provide the outer limit of the map or just to provide a decorative element.

This release adds a new Neatline button to its layout interface that provides several options for adding a neatline to your map. You can control the placement of a neatline by specifying whether it should be drawn around all graphics, selected graphics, or inset from the margins of a page. You can also vary the appearance of a neatline by changing its line style, width, and corner shape. Additionally, you can add background color and drop shadows.



To create neatlines and borders on your layout, use the Neatline button  available in the button bar. Once selected, the neatline dialog will appear.

Layouts can be exported into JPEG format

Layouts can now be exported into JPEG format.

Extensions

ArcView GIS extensions are add-on programs that provide specialized GIS functionality. When you load an extension, the ArcView GIS user interface changes to reflect the functionality available in the extension. Depending on the extension, new menus, buttons, tools, and dialog options will be available.

Extensions are loaded and unloaded using the Extensions dialog box. To access the Extensions dialog, choose Extensions from the File menu.

The following extensions are included with ArcView GIS:



CAD Reader extension

CAD Reader extension has been upgraded to support AutoCAD® 2000 (Release 15) drawing and DXF™ files in ArcView GIS. The extension also supports 3D CAD drawings which can be used with the ArcView 3D Analyst™ extension, allowing you to add 3D CAD drawings directly into 3D Analyst (similar to any other 3D themes) for analysis and interactive perspective viewing.

The CAD Reader extension is not available on UNIX.



Database Access extension

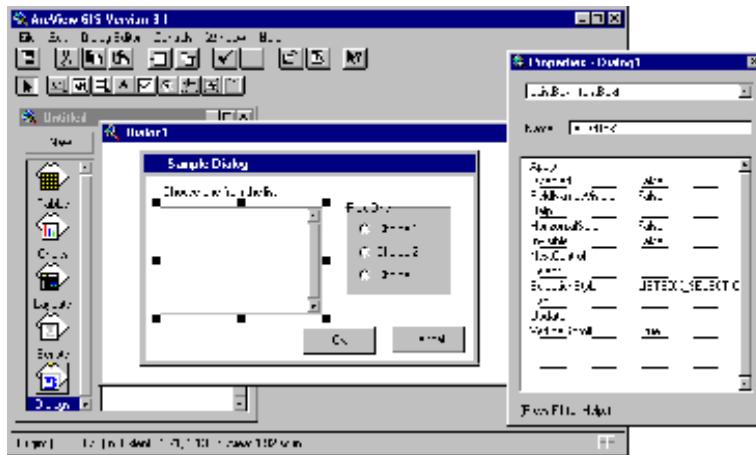
Database Access extension provides multiuser, client/server access to spatial and nonspatial data stored in relational databases. You can create database themes to see the spatial data, and database tables to see the nonspatial data in ArcView GIS.

Database Access 2.0 provides substantially enhanced access to ODBC compliant databases as well a significantly improved access to SDE. Database Access Version 2.0 is compatible with SDE 3.0.2 and 4.0.

In addition to selection support, selection enabled database tables now always display all of the records returned from a query instead of just an initial subset to which additional records can be added. The database table also exists entirely in memory and is no longer cached to disk. This is accomplished by maintaining a subset of records in memory and adjusting the subset as the table is scrolled.

Dialog Designer extension


Dialog Designer extension provides Avenue developers with tools for customizing the ArcView GIS interface. With this extension, you can create specialized input forms, organize related tools in separate dialogs, add buttons directly to your view or layout, and link what's displayed to your data. The extension supports the display of symbols in list and combo boxes. Multiple rows and columns in a list box are also supported. The Dialog Designer user guide is included with ArcView GIS 3.2.



Digitizer extension

Digitizer extension has been enhanced to support stream mode digitizing. Using this method, you click only the first vertex and simply trace over the feature on a paper map. When you complete tracing the feature, you click another button to end the line. ArcView GIS does the rest by automatically adding vertices based on a stream tolerance distance that you specify in the current map units. Stream mode digitizing makes it quick and easy to capture complex features, such as streams, rivers, and contours, off the paper map. When you load the Digitizer extension, ArcView GIS adds two new choices to the View menu: Stream Tolerance and Enable/Disable Stream Mode.

Stream Tolerance

When you trace features over the paper map in stream mode, ArcView GIS automatically adds vertices at a specified interval. You can set this interval in current map units and change the distance at any time, even while tracing an existing line. You can also specify the stream tolerance distance interactively using the Stream Tolerance tool  in the tool bar. (The Stream Tolerance tool allows you to perform the same functions interactively as the Stream Tolerance menu choice.)

Enable/Disable Stream Mode

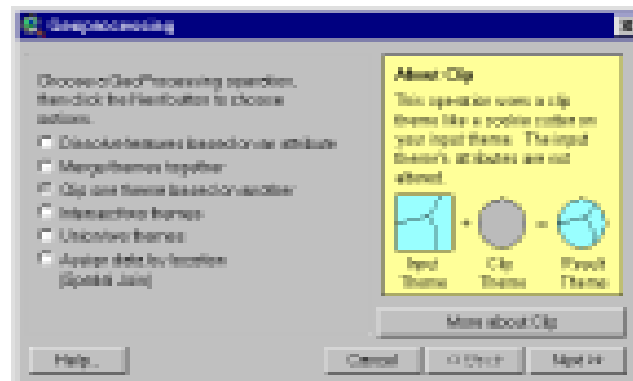
This menu item allows you to switch between digitizing in point mode and the new enhanced method of digitizing in stream mode. The default option is point mode digitizing. You may also use the F3 function key to switch between the two modes.

For detailed information on how to digitize features in stream mode, refer to the 'Digitizers, Stream mode digitizing' topic in the ArcView GIS online help index.

The Digitizer extension is not available on UNIX.

GeoProcessing extension

The wizard-based interface in this extension lets you perform some new spatial analysis functions in ArcView GIS. To access the GeoProcessing extension, load the extension using the Extensions dialog. Make sure a view is open and active. Then, from the View menu, choose GeoProcessing.



The following functions are provided:

Dissolve features based on an attribute

This process will aggregate features in a theme based on an attribute of that theme. For example, Dissolve could be used to create a theme showing sales regions by salesperson, where each salesperson is responsible for several counties. Sales territories could be established by removing shared county boundaries from those counties represented by the same salesperson.

Merge themes together

This process will append two or more themes into one theme. The merge process will create a new theme using the fields from the theme you select. If the other themes you're merging have more fields than the theme you have specified, those fields won't be in the new theme's table. If the other themes don't have the same fields as the theme you've specified, empty cells will be added to the new theme's table. You might merge several tiled county themes with census data to make a metropolitan area.

Clip one theme based on another

This process creates a new shapefile by using one theme (the clip theme) like a cookie cutter on another (the input theme). For instance, you might use a county boundary from a counties theme to clip a roads theme. This would create a new theme containing only the roads that fall inside the county boundary.

Intersect two themes

This process computes the geometric intersection of two themes and adds it to your view as a new theme. The two spatial data sets are integrated, but only the features that fall within the spatial extent common to both themes are preserved. For example, suppose you're a builder and want to build a retirement center within the city boundaries. You want to create a theme that assigns land use information (like building codes) to your parcel data so you can look for areas meeting the requirements for multifamily dwellings.

Union two themes

The Union process creates a new theme by overlaying two polygon themes. The output theme contains the combined polygons and attributes of both themes. Suppose you want to analyze the erosion potential of soils in a given area. Some combinations of slope and soil type represent high risk for erosion and knowing where these conditions exist enables risk assessment of crops. You have one theme with boundaries of slope and another with soil type data. You use Union to create a new theme that contains the spatial combination of information with attribute data, permitting evaluation of erosion potential.

Assign data by location

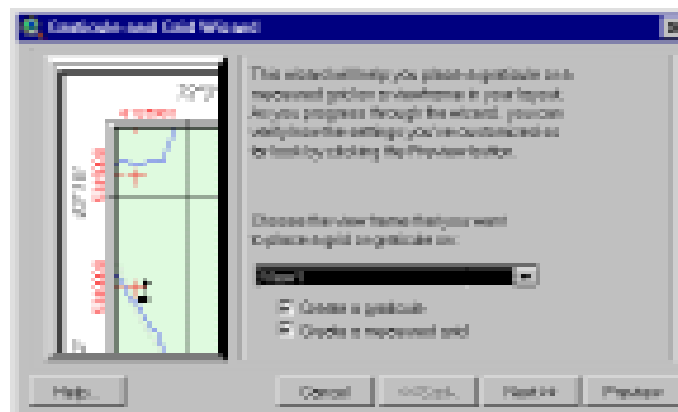
The assign data by location operation performs a spatial join between two selected themes. A spatial join is similar to an attribute join; however, it is based on the spatial relationship between the features in the two themes. For example, a travel agency concerned about client safety might assign data from a theme of hotels in a major city to a theme of crime events. The hotel data would be added to the crime event data, along with the distance to the hotel nearest the crime event. As a result, the hotels nearest the most crimes may not be recommended to the travel agency's safety-conscious clientele.


Graticules and Measured Grids extension

Graticules and grids are used to show latitude and longitude on a reference map such as a navigational chart, regional map, or a topographic map. Using a set of easy-to-use wizard panels, you'll be able to create a grid, graticule, or both. If you're not satisfied with the best-guess evaluation of ArcView GIS for settings, you can customize them yourself.

Customization options include the ability to show only graticule lines and labels or create a full or partial grid. There are also options for choosing the font style and size of your labels. The interval between graticule lines can be adjusted by changing the settings for degrees, minutes, and seconds. If you're showing graticule lines, you can set the line width and color.

Like graticules, you can also adjust display settings for a measured grid. The grid interval, again, is initially estimated by ArcView GIS, but you can choose to display your grid as tics or as a set of intersecting lines. Line width, color of grid tics and lines, as well as font, font size, and style for labels can be adjusted as desired. Border options, including line color and style, are also available.



To access the Graticules and Measured Grids extension, load the extension using the Extensions dialog. You must have at least one view frame in your layout before the Graticules and Measured Grids extension is enabled. Click the Graticule and Measured Grids button  on the ArcView GIS tool bar to display the first wizard panel.

ERDAS IMAGINE Image extension

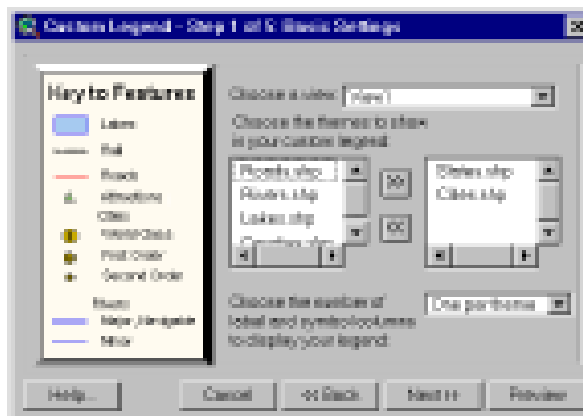
This extension provides support for ERDAS IMAGINE® images. ArcView GIS currently supports ERDAS IMAGINE 8.3.1 libraries on the PC and the 8.3 libraries on UNIX.


JPEG (JFIF) Image Support extension

This extension provides support for JFIF images, the public domain image file format for JPEG compressed images.

Legend Tool extension

This extension allows you to create a custom graphical legend in a layout using a set of user-friendly wizard panels. You can create a legend for any view in your project, choose which themes you want shown, and select how many columns to use to display symbols and labels. Other panels allow you to change legend titles, choose settings for legend borders, designate how legend symbols are represented, and set the spacing between legend elements. You can preview your legend at any time. This extension is derived from the previous sample extension, MapTools.



To use the Legend Tool, select the Legend Tool extension from the Extensions dialog. The Legend tool  will appear on the tool bar once you have a layout that contains one or more views. Click the Legend tool, then the layout.

Military Data Reader extensions

The Military Data Reader extensions allow ArcView GIS to recognize a variety of image data formats, typically of interest to the defense/intelligence community, as direct read image data sources. No translation is required to use these image data sources. Once the proper extension for each image format is loaded, you can use these image data sources with ArcView GIS like any other supported image data source. The Military Data Reader consists of multiple extensions that you can use in any combination. These extensions include support for the following formats:

- ARC Digitized Raster Graphics (*ADRG Image Support extension*)
- Compressed ARC Digitized Raster Graphics (*CADRG Image Support extension*)
- Controlled Image Base (*CIB Image Support extension*)
- National Image Transfer Format (*NITF Image Support extension*)

MrSID Image Support extension

MrSID™ is a multiresolution wavelet-based image format that allows a high compression ratio and fast access of large amounts of image data at any scale. Support for the MrSID image format was added as an example of using the `ImgDLL` class that allows image formats to be added to ArcView GIS. When you load the MrSID Image Support extension, you can add `.sid` files to views as image themes.



Report Writer extension

The Report Writer extension integrates the industry-leading Seagate Software's Crystal Reports report- generating and editing application with the existing ArcView GIS Table, View, and Project user interface. The goal of the ArcView GIS Report Writer interface is to streamline the process of data selection and preparation for the reporting process.

ArcView GIS provides a Report wizard that lets you choose the type of report you want, choose whether you want to use all the records in the table or only the selected records, and specify the output report name. Then the Report wizard will start the Seagate Software's Crystal Reports application with your data already loaded so you can easily continue designing your report.

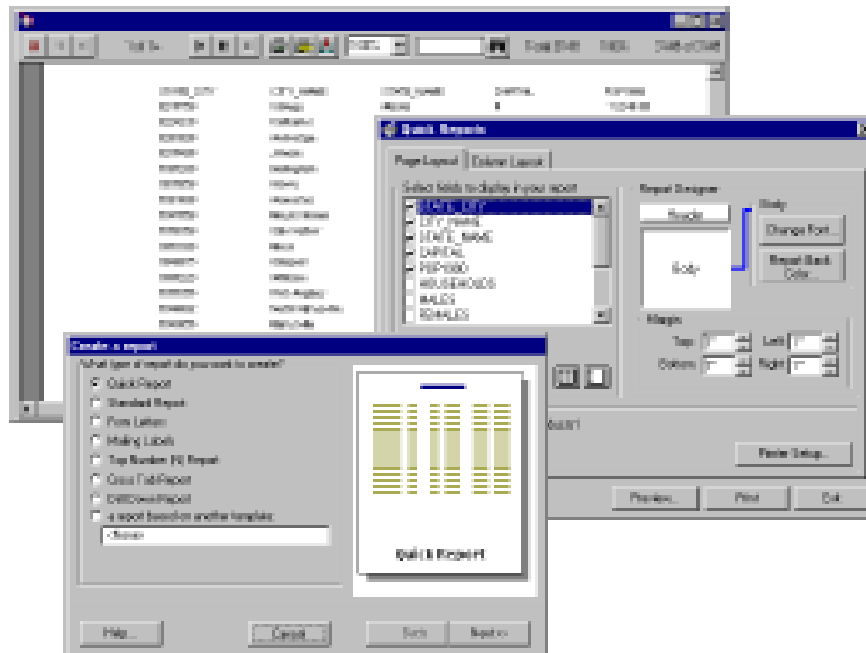
ArcView GIS 3.2 includes Seagate Software's Crystal Reports 7.

With the ArcView GIS Report wizard, you can choose one of the following report types:

- Quick Report
- Standard Report
- Form Letters
- Mailing Labels
- Top Number (N) Report
- Cross Tab Report
- Drill Down Report
- A report based on another template

Note: If you do not have Seagate Software's Crystal Reports installed on your system, you can still create a simple report with ArcView GIS using Quick Reports. The Quick Reports option does not use Seagate Software's Crystal Reports and is available after any installation of ArcView GIS. The Quick Reports interface provides basic tools for selection and organization of fields; setting fonts, column width, and row heights to be used in the report; and previewing and printing the report.

The Report Writer extension is not available on UNIX.



TIFF 6.0 Image Support extension

TIFF 6.0 Image Support extension allows you to add version 6.0 TIFF files to views as image themes and place them on layouts in picture frames. TIFF 6.0 image support includes the use of GeoTIFF 1.0 tags to properly place the image in the proper geographic space, if present.

VPF Viewer extension

VPF Viewer extension allows you to work with vector product format (VPF) data in ArcView GIS. Using this extension, you can integrate VPF databases into your work seamlessly without having to convert these files into ArcView GIS shapefile format.

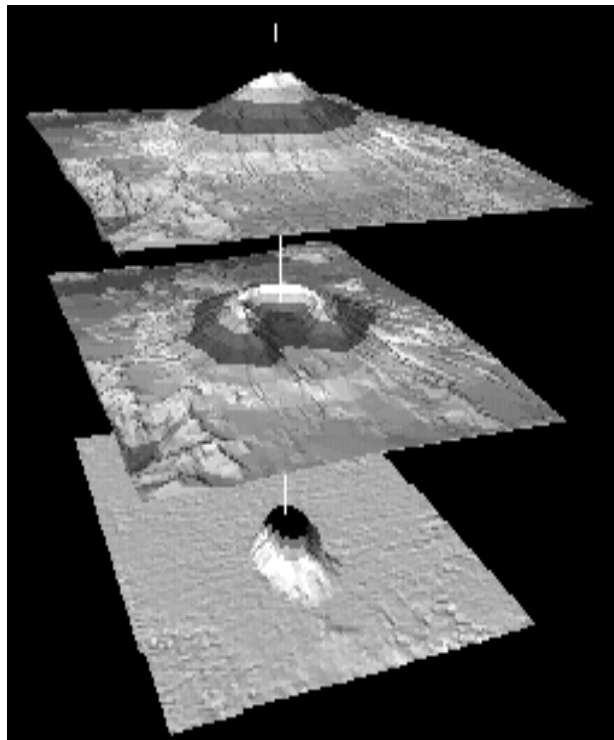
The VPF Direct Read function has been given the ability to add valid 3D VPF themes as 3D type files. A Valid 3D VPF theme is one where there are no null Z values present in the coordinate geometry. If any null values are found in the geometry, the theme will be added to the view as a 2D type file. The VPF Direct Reader will automatically detect whether a VPF theme is 3D and add it accordingly. To view the shapefiles in full 3D, you must have the 3D Analyst extension loaded.

Optional extensions

The optional extensions bring advanced, specialized GIS analysis to the desktop. They are available as separate software.

ArcView 3D Analyst extension

ArcView 3D Analyst extension provides a suite of high-quality, easy-to-use tools for creating, analyzing, and displaying surface data. This extension's unique capabilities include support for the TIN data model, 3D shapes, and interactive perspective viewing.



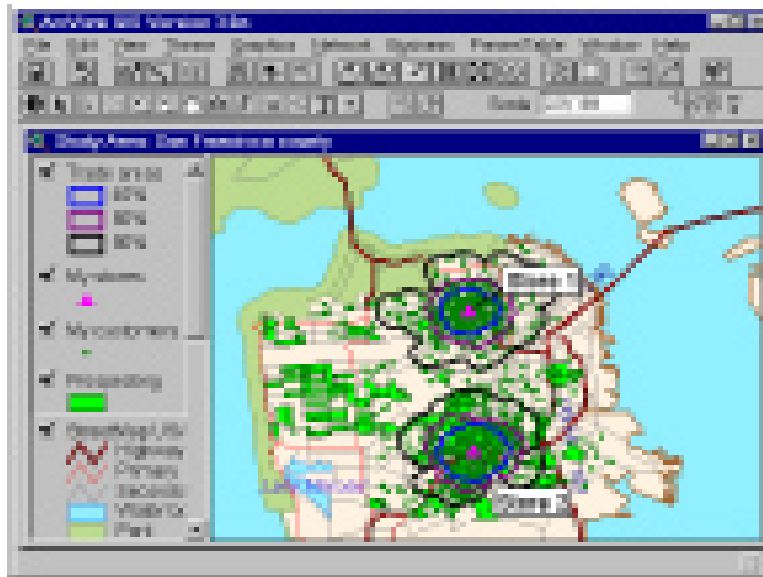
ArcPress for ArcView extension

ArcPress™ is a graphics metafile rasterizer that enhances the printing and exporting capabilities of ArcView GIS. ArcPress takes an ArcView GIS layout, rasterizes the data, and lets you set a variety of output, page, and print options.

ArcView Business Analyst extension

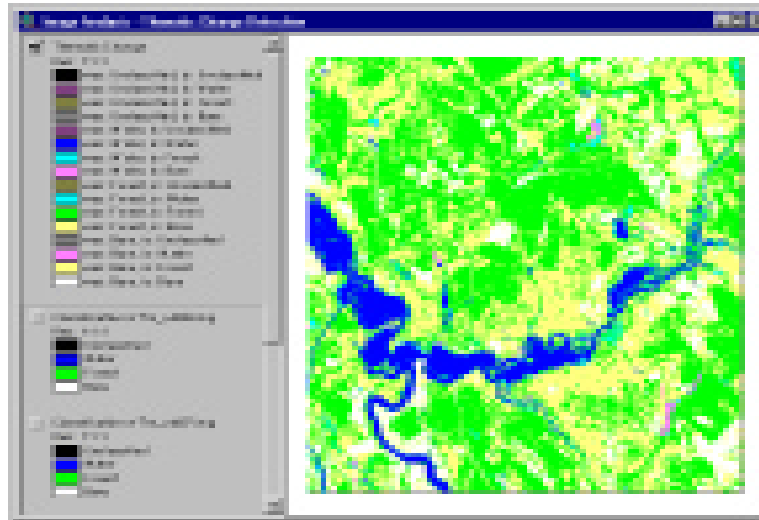
ArcView Business Analyst extension is a unique set of GIS tools and data designed specifically for business applications. ArcView Business Analyst lets users easily create and analyze market areas, perform site prospecting, profile customers and prospect for similar ones, conduct drive-time analysis, and create detailed reports. This extension captures the power of sophisticated data analysis through an easy-to-use wizard interface that guides you through your crucial business tasks. Included with the software is a comprehensive nationwide suite of business, household, demographic, and street data as well as the ArcView Network Analyst extension and the ArcView StreetMap™ extension.

The ArcView Business Analyst extension is not available on UNIX.



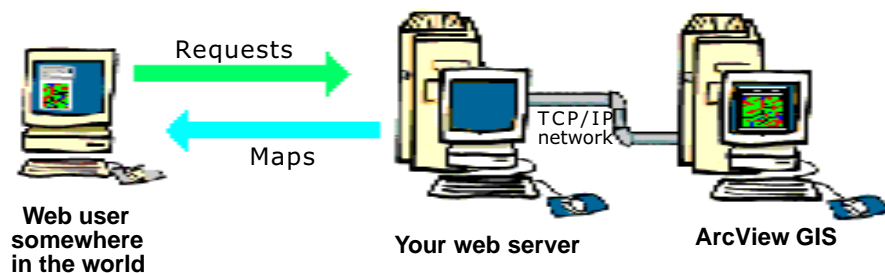
ArcView Image Analysis extension

Developed in close collaboration with leading image-processing software vendor, ERDAS, Inc., the ArcView Image Analysis extension provides easy-to-use analysis tools that allow you to display, enhance, and analyze remotely sensed imagery.



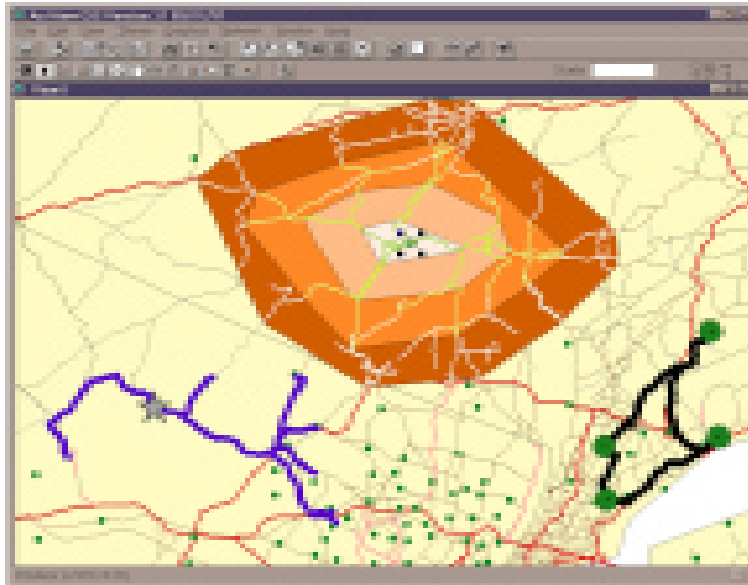
ArcView Internet Map Server extension

ArcView Internet Map Server (IMS) extension is a map publishing tool that makes putting your maps on the Web an easy process. The extension automatically creates a ready-to-use Web page containing your map and an interactive user interface you can use to browse, explore, and query it. You can also customize the Web pages IMS creates for you by adding your own text, graphics, backgrounds, and links, either by editing the HTML source directly, or by using a third party Web page authoring program. ArcView IMS uses a Java™ applet, called MapCafe™, to provide the user interface for your map when it appears on a Web page.



ArcView Network Analyst extension

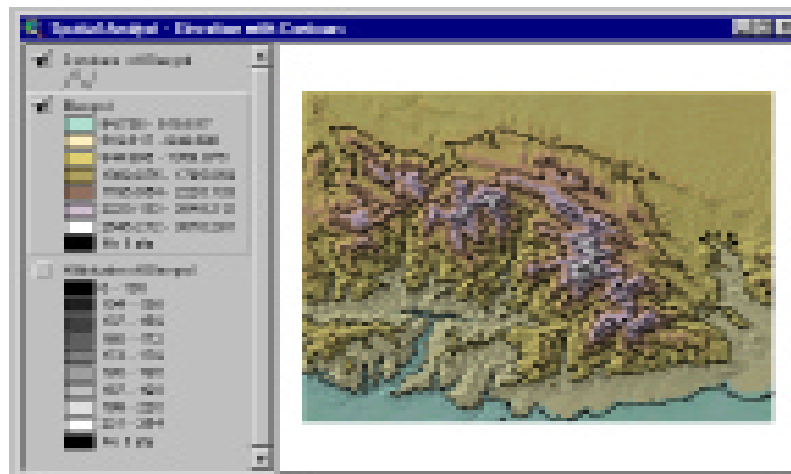
ArcView Network Analyst extension enables you to use geographic networks (such as streets, highways, rivers, pipelines, or electric lines) to solve problems such as finding the best travel route, generating travel directions, finding the closest emergency vehicle or facility, or defining service areas based on travel time. Network data used with this extension can come from any of the following sources: ArcView line shapefiles, ARC/INFO network or regular line coverages, and CAD drawings.



ArcView Spatial Analyst extension

ArcView Spatial Analyst extension provides tools to create, view, query, and analyze map cell-based raster data and to perform integrated vector-raster analysis using feature-based and grid-based themes.

Capabilities include conversion of feature themes to grid themes, creation of buffer distance and proximity surfaces from feature or grid themes, contouring and density mapping from themes containing point features, slope and aspect mapping, cell-based map analysis, Boolean query on multiple grid themes, neighborhood and zone analysis, and grid classification and display. The extension includes an extensive Avenue programming interface for developing spatial analysis applications.



ArcView StreetMap extension

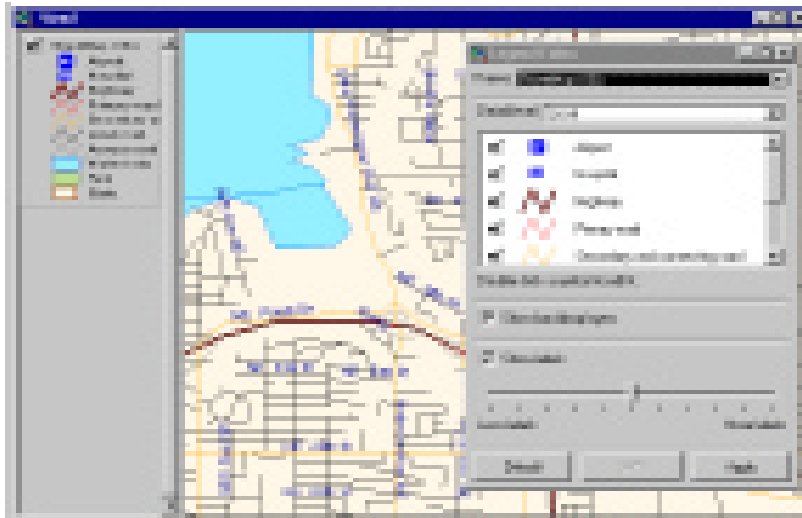
ArcView StreetMap extension adds nationwide address geocoding and street map display to ArcView GIS and includes a compressed street and landmark database for the entire United States on a single CD. The StreetMap extension uses data sourced from Wessex Streets 6.0. Wessex, a division of Geographic Data Technology, Inc. (GDT), enhances TIGER 97 by removing the telltale TIGER “wobble” that results in streets that are not straight. StreetMap data is in NAD83 coordinates.

The ArcView StreetMap extension is not available on UNIX.

ArcView StreetMap 2000 extension

ArcView StreetMap 2000 extension is enhanced StreetMap software developed jointly by ESRI and GDT. StreetMap 2000 supports nationwide address geocoding and street map display. This extension uses GDT's Dynamap/2000® database, released in January of 1999, and GDT's Matchmaker® geocoding engine. GDT's Matchmaker geocoder offers traditional geocoding capabilities and allows the matching of intersections and addresses composed of alphanumeric notations. An Interactive Matcher dialog box displays addresses that failed to match, explains the problem, and suggests possible alternatives. Additionally, state boundaries, cities, airports, hospitals, parks, lakes, and river data are integrated in to the display of the data found on the CD. The new StreetMap 2000 will be in NAD83 coordinates.

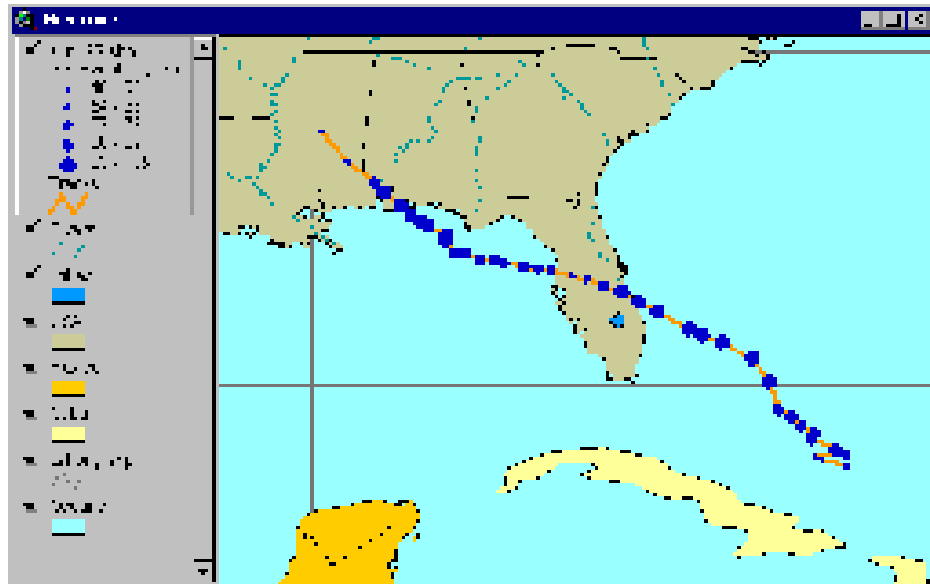
The ArcView StreetMap 2000 extension is not available on UNIX.



ArcView Tracking Analyst extension

ArcView Tracking Analyst extension can be used by anyone needing to view and analyze the movement and status of objects through time. Developed in close collaboration with TASC Inc., a major provider of advanced information technology solutions for governments and businesses worldwide, Tracking Analyst supports real-time Global Positioning System (GPS) and network connections, allowing you to map events in real time. For example, you could follow your delivery vehicles on their daily routes, track weather conditions such as hurricanes or lightning, or study the migration routes of animals.

The ArcView Tracking Analyst extension requires ArcView GIS 3.1 or higher and is available on Windows 98®, Windows NT® 4.0, and Solaris™.



ESRI Data & Maps



ArcView GIS 3.2 expands on the Canada, Mexico, United States and World data included in the last release and replaces the European data sets with cartographically improved information for the whole of Europe. The biggest change is the conversion to NAD83 coordinates for all of the United States data. Legend files (.avl) are provided along with projection files (.prj) which will be automatically used by the ArcView Projection Utility.

United States

Several improvements have been made to the United States data with this release. ZIP Code point and polygon data have been updated to 1999. GDT Dynamap/2000 v9.0 has been used to update major roads, major water, and all landmark layers including: large area landmarks, parks, transportation terminals, retail centers, recreation areas, institutions and airports. Area code boundaries from GDT and municipal boundaries are included, as well as incorporation of designated marketing area (DMA) boundaries. 1999 population estimates from CACI are incorporated into the attributes of state, county, census tract, and zip polygons.

World

Additional data for the world includes the World Wildlife Fund Conservation Science Program World Ecological Regions, and a true color image of the world created from AVHRR data enhanced with shaded relief at 4km resolution created by WorldSat International, Inc.

Europe

Data for Europe includes layers for roads, water and rivers, rail, cities, country, and administrative unit boundaries.

Images

A set of sample images for the area around Orlando, Florida, USA, courtesy of the MapFactory illustrate the different kinds of imagery that are available from image data sources. The sample includes examples of Landsat Thematic Mapper, SPOT Panchromatic imagery, Indian Resource Satellite, and 1 foot resolution ortho photos.

Samples

The samples directory contains a rich resource of sample programs you can use directly in your work or study to learn more about customizing ArcView GIS. There are three kinds of samples in the samples library: Avenue scripts, extensions, and other sample programs. For a listing and a description of samples in this directory, refer to 'Sample scripts and extensions' under the Contents tab in the Help Topics.

The extensions are located in the `$AVHOME\samples\ext` directory in your ArcView GIS installation.



ArcView Connect for R/3 extension

The ArcView Connect for R/3[®] sample extension allows you to initiate SAP[™] R/3 function modules from ArcView GIS. Using this extension, you can download R/3 data into ArcView GIS for visualization and spatial analysis, as well as interact with SAP R/3 on a transactional basis. This extension allows you to immediately utilize R/3 standard functions and provides a flexible tool to build custom applications that require ArcView GIS and SAP R/3 connectivity.

ArcView Connect for R/3 will quickly allow, for example, a download of customer information from R/3. If the customer data has address information, it can be geocoded, displayed, and analyzed with any other spatial data using ArcView GIS. ArcView Connect for R/3 can also be used to access data stored in several other SAP modules such as Materials Management (MM), Plant Maintenance (PM), Sales and Distribution (SD), Asset Management (AM), Service Management (SM), and others.

This extension uses a generic DLL that was built using the SAP C++ Developer Kit. The DLL is wrapped in a Visual Basic[®] (VB) GUI interface and allows communication to SAP R/3 via the SAP RFC (Remote Function Call) libraries. All source code for the VB example interface application is provided as part of the extension.

The extension requires a standard installation of the Samples. Its file is called `esrir3.avx` in the `$AVHOME\samples\ext\esrir3` folder.



ArcView R/3 Interface project

The ArcView R/3 Interface is a sample project that enables ArcView GIS to communicate with the Material Management (MM) and Plant Maintenance (PM) modules of SAP R/3. The ArcView R/3 Interface can also be customized and extended to work with other R/3 modules, and to present more options to the user within ArcView GIS.

This project requires a standard installation of the Samples. Its file is called avir3.apr in the \$AVHOME\samples\ext\esridqr3\avir3 folder. Refer to the readme.pdf file in this folder for more information on how to use the project.

Map Labeling extension

This sample extension adds a choice to the Theme menu that gives you an interface for labeling one or more themes so placement conflicts between labels will be resolved for all labels, regardless of what theme the label belongs to. The interface allows you to set priorities and rules for each theme that goes into the labeling process. For example, you can assign a different font to each theme.

The extension requires a standard installation of the Samples. Its file is called multmlab.avx in the \$AVHOME\samples\ext folder.

MGE Reader extension

This sample extension allows you to integrate data created in Intergraph's MGE software or Bentley's MicroStation® GeoGraphics software. You can also use data in MicroStation design files linked directly to external tables and ArcView GIS will manage the linkages for you. ArcView GIS presents this data in a manner familiar to ArcView GIS users while maintaining many tools and features of the native software. You can symbolize, query, and analyze the data just like any other spatial data without first converting the data in shapefile format. This allows you to view the most up-to-date data within ArcView GIS while the underlying data is constantly being updated in the native software.

This extension requires a standard installation of the Samples and is dependent on the CAD Reader extension. Its file is called MGEView.avx in the \$AVHOME\samples\ext folder.



DIGEST (ASRP/USRP)

This sample extension provides direct read support for raster data compliant with DIGEST Annex A, primarily used by international defense and military agencies. There are two profiles: Arc Standard Raster Product (ASRP) produced by the UK Mil Survey, and UTM/Universe Polar Stereographic (UPS) (USRP) produced by French Defense Mapping Agency (DGA). The reader will bring in a DIGEST image georeferenced. It supports ASRP 1.1, 1.2; and USRP 1.2, and 1.3.



MGRS Coordinate Display

This extension provides interactive display of coordinates on the screen in the Military Grid Reference System (MGRS). The extension assumes the source data is in decimal degrees, converts the coordinates to MGRS, and displays the MGRS coordinate in a dialog box.

MGRS is a coordinate system widely used in defense for designating the location of points of interest. Its use is especially prevalent in the Army. An agency of the U.S. Government developed an extension that would display this coordinate system in ArcView GIS.

The extension supports the coordinates as defined in the Army Handbook for Transformation of Datums, Projections, Grids and Common Coordinate Systems by U.S. Army Corps of Engineers Topographic Engineering Center, January 1996.

In addition to displaying the MGRS coordinate in real time, the extension also converts the MGRS coordinate to UTM/UPS and lat/long, and has an option to capture the points of interest in a file. The utility can also generate graticules within an MGRS zone for WGS84.



RPF Indexer

Raster Product Format (RPF) is one of the NITF's formats. CIB and CADRG are RPF products.

This sample extension reads the TOC file from each dataset and generates a shapefile that can be used as index theme for RPF image formats. As there is no naming scheme for CIB or CADRG, it is difficult to determine the geographic location of an image by its name. It is generally very time consuming to bring up one image, then search to find the adjoining image. The index theme helps the user choose the image of interest. Users can interactively select a block (or interactively draw a box) in the index theme to display the appropriate image(s) for that block. Click on the block (or drag a box) again and the image(s) will undraw.



S-57 Data Converter

The S-57 data format is defined in the International Hydrographic Organization's Special Publication S-57. This format was formerly referred to as DX-90.

S-57 is object-oriented, vector data stored in binary format. This sample converts the convert binary, S-57 (ENC) data to ArcView shapefiles, then displays the results by feature class (one theme per feature class and type). The extension supports all data types from S-57: spatial objects (connected nodes, isolated nodes, edges, faces), and feature objects (point, node, line, area, composite).

The UNIX version of the S-57 Converter is available only on Solaris.