C H A P T E R **18**

Google Earth Maps

Within Monitor > Google Earth Maps, you can create an outdoor location, import a file, view Google Earth maps, and specify Google Earth settings.

- Creating an Outdoor Location Using Google Earth
- Importing a File into WCS
- Viewing Google Earth Maps
- Google Earth Settings

Creating an Outdoor Location Using Google Earth

To group the access points together into outdoor locations, use the Latitude/Longitude geographical coordinates for each access point. These coordinates are provided in two ways:

- Importing a KML (Google Keyhole Markup Language) File
- Importing a CSV File (Spreadsheet format with comma-separated values)

Understanding Geographical Coordinates for Google Earth

The following geographical information is required for each access point:

- Longitude (East or West)—Angular distance in degrees relative to Prime Meridian. Values west of Meridian range from –180 to 0 degrees. Values east of Meridian range from 0 to 180 degrees. Default is 0.

   Coordinates in degrees, minutes, seconds, direction:

   - Degrees (–180 to 180)
   - Minutes (0 to 59)
   - Seconds (00.00 to 59.99)
   - Direction—East or West (E, W)

   Decimal format (converted from degrees, minutes, and seconds):

   - Longitude can range from –179.59.59.99 W to 179.59.59.99 E

- Latitude (North or South)—Angular distance in degrees relative to the Equator. Values south of the Equator range from –90 to 0 degrees. Values north of the Equator range from 0 to 90 degrees. Default is 0.

Coordinates in degrees, minutes, seconds, direction:

   – Degrees (–90 to 90)

   – Minutes (0 to 59)

   – Seconds (00.00 to 59.99)

   – Direction—North or South (N, S)

Decimal format (converted from degrees, minutes, and seconds):

   – Latitude can range from –89.59.59.99 S to 89.59.59.99 N

- Altitude—Height or distance of the access point from the earth's surface in meters. If not provided, value defaults to 0. Values range from 0 to 99999.

- Tilt—Values range from 0 to 90 degrees (cannot be negative). A tilt value of 0 degrees indicates viewing from directly above the access point. A tilt value of 90 degrees indicates viewing along the horizon. Values range from 0 to 90. The default azimuth angle is 0.

- Range—Distance in meters from the point specified by longitude and latitude to the point where the access point is being viewed (the Look At position)(camera range above sea level). Values range from 0 to 999999.

- Heading—Compass direction in degrees. Default is 0 (North). Values range from 0 to ±180 degrees.

- Altitude Mode—Indicates how the <altitude> specified for the Look At point is interpreted.

   – Clamped to ground—Ignores the <altitude> specification and places the Look At position on the ground. This is the default.

   – Relative to ground—Interprets the <altitude> as a value in meters above the ground.

   – Absolute—Interprets the <altitude> as a value in meters above sea level.

- Extend to ground—Indicates whether or not the access point is attached to a mast.

Creating and Importing Coordinates in Google Earth (KML File)

The geographical coordinates can be created in Google Earth and imported. Either a folder or individual placemarks can be created. Creating a folder helps group all the Placemarks into a single folder and allows you to save the folder as a single KML (a.k.a. XML) file. If individual Placemarks are created, each Placemark must be individually saved.

Follow these steps to create a folder in Google Earth:

Step 1   Launch Google Earth.

Step 2   In the Places panel on the left sidebar, select **My Places** or **Temporary Places**.

Step 3   Right-click Temporary Places and select **Add > Folder** from the drop-down menus.

> **Note**   Folders can be created hierarchically to n level depths. When creating KMLs, you can create placemarks and organize them hierarchically according to the zone, city, state, zip.
> This is not applicable for CSV. In CSV there can be only one level of hierarchy.

Step 4   Enter the following information (optional):

- Name—Folder name

- Description—Folder description

• View—Includes latitude, longitude, range, heading, and tilt

> **Note**   If the View coordinates (latitude, longitude, range, heading, and tilt) are specified, this information is used to "fly" or advance to the correct location when Google Earth is first loaded.
> If no coordinates are specified, the latitude and longitude information is derived using the minimum and maximum latitude and longitude of all access points within this group or folder.

Step 5   Click **OK** to save the folder. After the folder is created, it can be selected from the Places panel to create Placemarks.

To create Placemarks, follow these steps:

Step 1   Launch Google Earth.

Step 2   In the Places panel on the left sidebar, select **My Places** or **Temporary Places**.

Step 3   Select the folder that you previously created.

Step 4   Right-click your created folder and select **Add > Placemark** from the drop-down menus.

Step 5   Configure the following parameters, if applicable:

• Name—The Placemark name must contain the name, MAC address, or IP address of the appropriate access point.

> **Note**   The MAC address refers to base radio MAC not Ethernet MAC.

• Latitude—Provides the current coordinate for the folder if the placemark is created inside the folder or the coordinate for the placemark (if not created inside a folder). This parameter is automatically filled depending on where the yellow Placemark icon is located on the map. Use your mouse to move the Placemark to the correct location or enter the correct coordinate in the Latitude text box.

• Longitude—Provides the current coordinate for the folder if the placemark is created inside the folder or the coordinate for the placemark (if not created inside a folder). This parameter is automatically filled depending on where the yellow Placemark icon is located on the map. Use your mouse to move the Placemark to the correct location or enter the correct coordinate in the Longitude text box.

• Description (optional)—Parameter is ignored by WCS.

• Style, Color (optional)—Parameter is ignored by WCS.

• View—Allows you to configure the Latitude, Longitude, Range, Heading and Tilt coordinates. See "<CrossRef>Understanding Geographical Coordinates for Google Earth" for more information on these geographical coordinates.

  – Longitude and latitude are automatically filled depending on where the yellow Placemark icon is located on the map. Use your mouse to click on and move the Placemark to the correct location.

  – All of the coordinates can be entered manually.

• Altitude—Enter the altitude in meters in the text box or use the Ground to Space slide bar to indicate the altitude.

- **–** Clamped to ground—Indicates that the *Look At* position is on the ground. This is the default.

- **–** Relative to ground—Interprets the <altitude> as a value in meters above the ground.

- **–** Absolute—Interprets the <altitude> as a value in meters above sea level.

- **–** Extend to ground—For Relative to ground or Absolute settings, indicates whether or not the access point is attached to a mast.

Step 6 When all coordinates are entered, click **Snapshot current view** or click **Reset** to return the coordinates to the original settings.

> **Note** For more information regarding Google Earth, refer to the Google Earth online help.

Step 7 Click **OK**.

Step 8 Repeat these steps for all placemarks you want to add.

Step 9 When all placemarks are created, save the folder as a .kmz file (KML Zip file) or as a .kml file.

> **Note** A .kmz file should contain only one .kml file.

> **Note** To save the folder, right-click on the folder, select **Save as** from the drop-down menu, navigate to the correct location on your computer, and click **Save**. Both .kmz and .kml files can be imported into WCS.

Creating and Importing Coordinates as a CSV File

To create a CSV file to import into WCS, follow these steps:

Step 1 Open a flat file and provide the necessary information as a comma-separated list. The Table 18-1 lists the potential data, whether the data is optional or required, and the parameters of the data.

> **Note** For more information regarding the geographical coordinates listed below, see the "Understanding Geographical Coordinates for Google Earth" section on page 18-1.

Table 18-1 Potential Fields for the CSV File

"FolderName"	"Value Optional"	Max Length: 32
"FolderState"	"Value Optional"	Permitted Values: true/false
"FolderLongitude"	"Value Optional"	Range: 0 to ±180
"FolderLatitude"	"Value Optional"	Range: 0 to ±90
"FolderAltitude"	"Value Optional"	Range: 0 to 99999
"FolderRange"	"Value Optional"	Range: 0 to 99999

Table 18-1   (continued)Potential Fields for the CSV File

"FolderName"	"Value Optional"	Max Length: 32
"FolderTilt"	"Value Optional"	Range: 0 to 90
"FolderHeading"	"Value Optional"	Range: 0 to ±180
"FolderGeoAddress"	"Value Optional"	Max Length: 128
"FolderGeoCity"	"Value Optional"	Max Length: 64
"FolderGeoState"	"Value Optional"	Max Length: 40
"FolderGeoZip"	"Value Optional"	Max Length: 12
"FolderGeoCountry"	"Value Optional"	Max Length: 64
"AP_Name"	"Value Required"	Max Length: 32
"AP_Longitude"	"Value Required"	Range: 0 to ±180
"AP_Latitude"	"Value Required"	Range: 0 to ±90

Step 2   Save the .csv file. The file is now ready to import into WCS.

Importing a File into WCS

To import a Google KML or a CSV into the Google Earth Maps feature of WCS, follow these steps:

Step 1   Log in to WCS.

Step 2   Choose **Monitor > Google Earth Maps**.

Step 3   From the Select a command drop-down menu, choose **Import Google KML** or **Import CSV**.

Step 4   Click **GO**.

Step 5   Use the Browse button to navigate to the .kml, .kmz, or .csv file on your computer.

Step 6   When the file name path is displayed in the text box, click **Next**.

The input file is parsed and validated for the following:

- Access points specified in the uploaded file are validated (the specified access points must be available within WCS).
- Range validations are performed for longitude, latitude, tilt, heading, range, and other geographical coordinates fields.
- If provided, longitude and latitude coordinates are validated.

Note   If the input file does not validate for completeness, an error page appears. The uploaded information cannot be saved until all errors are corrected.

Step 7   After the files pass all validation checks, review the file details and click **Save**.

If the uploaded information was saved previously, the information is overwritten accordingly:

- If the folder was uploaded previously, the coordinates are updated for the folder.
- If access points were uploaded previously, the coordinates are updated for the access points.

- Existing access points in the folder are not removed.
- New folders, as needed, are created and access points are placed accordingly.

Viewing Google Earth Maps

To view Google Earth maps, follow these steps:

Step 1 Log in to WCS.

Step 2 Choose **Monitor > Google Earth Maps**. The Google Earth Maps window displays all folders and the number of access points included within each folder.

Step 3 Click **Launch** for the map you want to view. Google Earth opens in a separate window and displays the location and its access points.

> **Note** To use this feature, you must have Google Earth installed on your computer and configured to auto-launch when data is sent from the server. You can download Google Earth from Google's web site.

Viewing Google Earth Map Details

To view details for a Google Earth Map folder, follow these steps:

Step 1 From the Google Earth Map window, click the folder name to open the details window for this folder. The Google Earth Details provide the access point names and MAC or IP addresses.

> **Note** To delete an access point, select the applicable check box and click **Delete**.
> To delete the entire folder, select the check box next to **Folder Name** and click **Delete**. Deleting a folder also deletes all subfolders and access points inside the folder.

Step 2 Click **Cancel** to close the details window.

Google Earth Settings

Access point related settings can be defined from the Google Earth Settings window. To configure access point settings for the Google Earth Maps feature, follow these steps:

Step 1 Choose **Monitor > Google Earth Maps**.

Step 2 From the Select a command drop-down menu, choose **Settings**.

Step 3 Click **GO**.

Step 4 Configure the following parameters:

- Refresh Settings—Select the **Refresh from Network** check box to enable this on-demand refresh. This option is applied only once and then disabled.

⚠

Caution   Because this refresh occurs directly from the network, it could take a long period of time to collect data according to the number of access points.

- Layers—Layer filters for access points, access point heat maps, and access point mesh information can be selected and saved. Choose the check box to activate the applicable layer and click **>** to open the filter window.

✎

Note   These settings apply when Google Earth sends the request for the next refresh.

- Access Points—From the drop-down menu, choose to display channels, Tx power level, coverage holes, MAC addresses, names, controller IP, utilization, profiles, or clients.

✎

Note   If the access point layer is not checked, no data is returned, and an error message is returned to Google Earth as a Placemark without an icon.

- AP Heatmap—From the Protocol drop-down menu, choose **802.11a/n**, **802.11b/g/n**, **802.11a/n & 802.11b/g/**n, or **None**. Select the cutoff from the RSSI Cutoff drop-down menu (- 60 to - 90 dBm).

✎

Note   If the protocol chosen is both 802.11a/n and 802.11b/g/n, the heat maps are generated for both and overlaid on top of each other. The order cannot be defined. To prevent this overlay, you must turn off individual overlay in Google Earth or change it in the Google Earth Settings on WCS.

- AP Mesh Info—Choose **Link SNR**, **Packet Error Rate**, or **none** from the Link Label drop-down menu. Choose **Link SNR** or **Packet Error Rate** from the Link Color drop-down menu.

✎

Note   When the AP Mesh Info check box is chosen, Mesh Links are also automatically shown.

Step 5   Click **Save** to confirm these changes or **Cancel** to close the window without saving the changes.