ESC Vision SDK Developer Reference

Units, public types, samples, terminology, and first implementation direction

Where are the sample files?

The installer contains precompiled BPLs and documentation only. It does not contain the **Sample** folder. Evaluation and All-in customers download the same ESC Vision SDK Samples bundle from **https://esc-soft-tech.com/#documentation**. Extract it to a writable folder such as Documents\ESC Vision SDK Samples, then use the project paths below. The installed SDK controls behavior: Evaluation restrictions and output marking are enforced by the Evaluation SDK, while All-in enables its licensed feature set. Samples cannot unlock another edition. Do not build samples from Program Files.

Delphi library setup

The installer places edition-specific DCPs in **$(BDS)\lib\ESCVisionSDK\Win32** and **Win64** and safely appends the corresponding folder to each Delphi platform's Library path without replacing existing UniDAC or other third-party entries. Supplied samples also include **$(BDS)\lib\ESCVisionSDK\$(Platform)** in their project Search path. Restart RAD Studio after installation. The ESC Vision Tool Palette page confirms design-time registration. Do not add the private SDK source path.

Sample map

Use case	Location in source/sample bundle	Purpose
USB discovery	Sample\Camera Discovery\CameraDiscovery.dproj	Enumerate devices and start/stop preview. Start here.
Still image	Sample\Photo Capture\PhotoCapture.dproj	Live preview and still-image capture.
ID photo	Sample\Photo ID Capture\PhotoIDCapture.dproj	Modal capture dialog returns bitmap to caller.
Recording	Sample\Camera Recording\CameraRecording.dproj	Live monitor and FFmpeg recording.
IP camera	Sample\RTSP Preview\RTSPPreview.dproj	RTSP URL validation and preview.
Multiple cameras	Sample\Multi-Camera Dashboard\MultiCameraDashboard.dproj	Individual preview/control workflow.
Live face boxes	Sample\Face Detection\FaceDetection.dproj	Frame processing and local detection.

Capture one still photo in VCL

Open **Sample\Photo Capture\PhotoCapture.dproj**. It reuses the tested capture form in Camera Discovery. Winapi.DirectShow9 supplies the capture graph; ESC.Vision.CameraDeviceInfo and ESC.Vision.Backends.MediaFoundation provide SDK discovery; Vcl.Graphics supplies TBitmap.

Call the modal capture helper from your form:

```
uses Vcl.Graphics, frmMain_u;

procedure TMyForm.CaptureButtonClick(Sender: TObject);
var Photo: TBitmap;
begin
Photo := TMainForm.CapturePhoto(Self);
try
if Assigned(Photo) then
Image1.Picture.Assign(Photo);
finally
Photo.Free;
end;
end;
```

In the capture window, enumerate and select a camera, start preview, and click Use Photo. The returned bitmap belongs to the caller and must be freed. Evaluation marking is applied inside the Evaluation SDK; All-in returns the licensed result. TCameraSnapshot remains a lower-level development API and is not the recommended still-photo entry point in 1.2.1.

Recommended unit reference

Unit	Use
ESC.Vision.Core	High-level Vision entry point; begin here for normal applications.
ESC.Vision.Types	Shared enums/records: camera state, capture modes, formats, codecs, capabilities, events.
ESC.Vision.UI.VCL / ESC.UI.VCL.CameraPreview	VCL integration and TESCVCLCameraPreview visual host.
ESC.Vision.CameraManager	Camera discovery and orchestration.
CameraDevice, CameraDeviceInfo, CameraDeviceCollection	Discovered-device models and collections.
CameraFormat, CameraFormatCollection, CameraCapabilities	Supported stream formats and device features.
CameraSession / CameraPreviewSession	Start, stop, pause, resume, refresh, and preview lifecycle.
CameraSnapshot / CameraFrameBitmap / CameraFrameBuffer	Still frames, bitmaps, and frame data.
CameraRecorder / CameraRecorder.FFmpeg	Recording abstraction and FFmpeg implementation.
CameraStream.DirectShow / CameraStream.RTSP	Local USB and network RTSP stream implementations.
FrameProcessor / FrameProcessorPipeline	Composable per-frame processing.
Face, Face.Types, Face.WindowsML, Face.Tracker	Detection results, local detector, and tracking. Detection is not identity matching.
Evidence.Types / Evidence.Storage / Evidence.FireDAC	Captured-material metadata and optional FireDAC persistence.
Evaluation	Visible marking applied by the Free Evaluation edition.

Public type map

These are the concrete public types a Delphi developer is most likely to use. The last column states the exact delivered sample that uses the type directly, or says when it is a supporting API.

Type	Unit and purpose	Sample form/project
TESCVCLCameraPreview	ESC.UI.VCL.CameraPreview - VCL preview host. Black at design time is normal.	Add to any VCL form.
TCameraFrameData	ESC.Vision.CameraStream - raw BGR24 frame: ID, size, timestamp, bytes.	Camera Recording, Face Detection, Multi-Camera Dashboard, RTSP Preview.
ICameraStream / TCameraStreamBase	ESC.Vision.CameraStream - common start, stop, state, and frame-handler contract/base.	Supporting stream API.
TDirectShowCameraStream	ESC.Vision.CameraStream.DirectShow - local USB/Windows stream.	Face Detection; Multi-Camera Dashboard.
TFFmpegRTSPCameraStream	ESC.Vision.CameraStream.RTSP - RTSP stream with reconnect/timeout/error settings.	RTSP Preview.
TFFmpegCameraRecorder	ESC.Vision.CameraRecorder.FFmpeg - FFmpeg recorder and preview reader.	Camera Recording.
TCameraManager	ESC.Vision.CameraManager - Devices, Refresh, FindByIdentifier.	High-level application API.
TCameraDeviceInfo	ESC.Vision.CameraDeviceInfo - device display name, ID, and metadata.	Camera Discovery.
TCameraSession / TCameraPreviewSession	Matching CameraSession units - capture and preview lifecycle.	High-level application API.
TCameraSnapshot	ESC.Vision.CameraSnapshot - still-frame snapshot state/output name.	High-level application API.
TFaceRectangle / TFaceDetection	ESC.Vision.Face.Types - pixel bounds, confidence, landmarks, and arrays.	Face Detection.
TWindowsMLUltraFaceDetector	ESC.Vision.Face.WindowsML - local detector; use ConfidenceThreshold, IsAvailable, LoadError.	Face Detection.
TFaceDetectionTracker	ESC.Vision.Face.Tracker - stabilizes successive detections and triggers an event.	Live Face Detection form.
TUnidentifiedFaceEvent / TFaceCaptureLocation	Face.Tracker / Face.Types - event timing, stable count, and location tag.	Live Face Detection form.
TUnknownObservation / TAuditEntry	ESC.Vision.Evidence.Types - metadata records for observations and audit entries.	Storage-oriented API.

Advanced layers

ESC.MediaFoundation.*, **ESC.Media.***, and **ESC.Foundation.*** are lower-level Media Foundation, buffering, graph, COM, runtime, and logging layers. They are useful when extending the SDK or writing a custom backend. Standard VCL projects should start with ESC.Vision.Core, ESC.Vision.Types, ESC.Vision.UI.VCL, and the samples.

Glossary

Term	Meaning
BPL	Delphi package library loaded by an application or RAD Studio.
DCP	Compiler metadata for a Delphi package.
Design-time package	Package that places components in the Delphi Tool Palette.
Runtime package	Package used by the compiled application.
Preview	Live rendered camera picture; not yet a saved photo.
Snapshot	One still frame captured from an active stream.
RTSP	Network stream protocol commonly used by IP cameras.
FFmpeg	External media tool used by recording workflows.
Face detection	Locates face-like regions; does not identify a person.

Troubleshooting

If no device appears, enable Windows Settings - Privacy & security - Camera for desktop apps, then close other programs that own the device. For recording/RTSP, verify the FFmpeg path or RTSP URL first. For unstable face boxes, improve lighting and use a larger, frontal face in the preview.

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