CHANGE LOG.

➡ This is the second major release of the v10 LightningChart® .NET line. This release focuses heavily on LightningChart's performance. Charts will now have the improved line series for real-time monitoring, the improved interaction with IntensityGridSeries and PointLineSeries3D, the improved performance when 1000's AnnotationXY and Polar Sectors are used.

SampleDataBlockSeries

We are introducing SampleDataBlockSeries, a new series fully optimized for real-timeapplications. It offers the best possible performance with least CPU and memory consumption,and unmatched smoothness in data scrolling/sweeping. This allows rendering extremely highnumber of data points simultaneously.

SampleDataBlockSeries is the optimal series type forreal-time medical monitoring applications, such as ECG/EKG, EEG, industrial monitoringapplications, telemetry, and waveform vibration monitoring.

Improvement for IntensityGridSeries and PointLineSeries3D

We made zooming and panning of large IntensityGridSeries (heatmaps) up to 100 times faster(when using PixelRendering). At the same time CPU load decreases from 80% to 20%. We alsoimproved PointLineSeries3D rendering speed and interaction. Data point 3D tracking is up to 40times faster.

Improvement when 1000's objects are used

We have made rendering much faster for the multiple XY Annotations and Polar Sectors. When thousands of Annotations are used rendering and chart interaction is 10-50 times faster. Polarchart with thousands of Sectors performs up to 10 times faster (when using Software11rendering engine).

Other improvements and features

TradingChart component now also support MarketStack data provider and 2 new technical indicators are added (Stochastic Oscillator and Money Flow Index). We added new GetSegmentsAtPoint() method for LineCollection (to identify segment at specified position). We added new properties to control LegendBox's checkbox size and full transparency of 3D wall. Now user can specify range of color to be clipped from VolumeModel.

Changes in NuGet packages

To avoid fragmentation of packages and minimize confusion, we are changing naming of packages for LightningChart® .NET library.

From now on, the primary name for NuGet package is *'LightningChart'*. It is same name/package for WPF, WinForms and UWP applications. In addition, *LightningChart.nupkg* will contain all minor and major releases from version 8.0.1 up to the latest one.

Check out rest of the changelog for detailed information. This is a full listing of the changes in version 10.1.1 against 10.0.1

New Features

- **SampleDataBlockSeries - a new, super-fast, line series is introduced.**
SampleDataBlockSeries is the optimal series type to visualize scrolling/sweeping real-timedata. With very low variations in refresh intervals, it gives a smooth monitoring experience, much better than SampleDataSeries. SampleDataBlockSeries uses less RAM and CPU resources, provides a higher FPS and a significantly better responsiveness to user interactions.

- **User can now change legendbox checkbox size.**
Added public property for user to change legend box checkbox size [DPI] - CheckBoxSize.

- **Added GetSegmentsAtPoint method for LineCollection.**
New method for LineCollection (GetSegmentsAtPoint) returns the list of SegmentLine array indices. Only segments, which cross specified point, are added to the list.

- **User can now set 3D walls to be fully transparent.**
User can set 3D wall Material to full transparent with Boolean (i.e. FullTransparent).

Improvements

- **Now user can Clip range of colors away from VolumeModel.**
Added user ability to clip color range away from volume model by using ClipColorRangeand ColorRangeToClip properties

- **Refined Annotation behavior while moved by user.**
Annotation has several Allow... flags, which locks/unlocks different part of Annotation forthe movement. Disabled AllowUserInteraction stops any action (including, moving, rotating, raising Click events etc.). AllowAnchorAdjust controls movement of arrow's starting (as well as relative points text area is rotated around). AllowDragging controls TextBox movement. AllowResize controls resize of TextBox. AllowRotate controls TextBox resize. AllowTargetMove controls movement of ending point of the arrow.

- **Axis CustomTicks can now have same value but difrent other properties.**
User can now have same value on custom ticks but different color, style or text in the same location.

- **Improved Chart rendering when 1000's Annotations used.**
Now Chart rendering will be significantly faster, especially if Annotation is outside of visible range. For example, if 1000's Annotations were created, but only 1% percent is in visible range, then the Chart will be rendered 10-50 time faster (as compared to previous versions).

- **Improved PointLineSeries3D rendering speed and interaction.**
Previously reading mouse position over 3D cloud of points was very slow when the amount of points have been million or more. The improved version allow real-time tracking, which could be 100x faster than before.
Note, the interaction with 3D world (e.g. rotation) will now be fast also whenPointLineSeries3D. AllowUserInteraction is enabled. However, it is not recommended to call PointLineSeries3D.IsPositionOver() method during camera/View3D change, as it may slowdown interactions.

- **Improved zoom/panning speed for a very large IntensityGridSeries.**
Now zoom/panning speed for a very large IntensityGridSeries (more than million nodes) is much faster. It could be hundred time faster for very demanding grids. Note, this when enabled PixelRendering for IntensityGridSeries.

- **Improved interaction of Polar chart with 1000's of Sectors during SW11 rendering.**

- **Minor speed-up for image loading for WPF.**
Images could be used as Fill or Shape in multiple Charting object. This improvement helps to increase the overall Chart rendering speed.

Error Fixes

• **AnnotationXY IsPositionOver fixed to detect position correctly on Sweep mode.**

• **Prevent AutoYFit if theres no visible datapoints.**
Prevent AutoYFit if theres no visible datapoints in area

• **Corrected BarSeries rendering for the small values - [BCB]**
Now Horizontal and Vertical bars are rendered similarly. There are two special and distinctcases. First, if Bars.Values[i].Value=0, then bar is not rendered (but label is shown). Second,if relative value is very small (like during zoom-out), then at least 1px width/height is shown.

• **CopyToClipboard the chart in vector format with fixed size no longer causes a crash.**
Chart no longer crashes if CopyToClipboard (SaveToFile, SaveToStream have been fiex inv10.0.1) method is called with fixed size and vector format.

• **Fixed CopyToStream error when Polar chart was exported to custom size in vector format.**

• **Fixed PolygonSeries XY crash due to highlighting.**

• **Chart should not crash anymore when calling SaveToStream with fixed parameters.**
Previously it may lead to long delays and blank files (ChartMessage may report "Settingdisposed item as render target"). Now error is fixed.

• **Default Shape2D shape for 3D was not set correctly.**
Default Shape2D shape for 3D was not set correctly. Instead of rectangle it was showing asHollowBasicActive. This error affected only version 10.0.1.

• **Binding to properties Wall3D Thickness and LineSeriesCursor GrabPadding fixed.**
Affected only version 10.0.1. InvalidCastException was thrown when trying modify bindableproperties Wall3D Thickness and LineSeriesCursor GrabPadding. Now error fixed.

• **Fonts can be modified correctly - [BCB].**
Fonts in WPF and WinForms can now be modified correctly. Also, font sizes in WinFormsare correctly displayed.

• **Chart graph area behaves correctly with LabelTicksGap.**
The size of the graph area of the chart is calculated better when using manual X-axis positionand increased LabelTicksGap property.

• **Fixed error of LegendBox layout when Categorization is used.**
Previously LegendBox size seems to be missing or not taking properly into account Categorytext size. Error now fixed.

• **Small improvement in rendering smoother lines.**

• **Point's border now drawn correctly for overlapping points with Rendering Engine 9.**

• **Polar sector arc is more rounded now.**
Previously, in some cases outside arc was not round enough for low resolution chart/window.It was fixed by add extra point/segment.

• **PolygonSeries rendering region calculation fixed for some very thin polygons. - [BCB].**

• **Fixed HERE map on rendering on Chart when SaveToFile and CaptureToClipboardmethods with size parameters.**
Previously tiled map background (from HERE map provider) was not save with chart(SaveToFile or CaptureToClipboard methods), if size parameter is used. Issue is fixed now.

• **Scrollbars position is now drawn correctly after margins change.**
Previously ScrollBar was not drawn correctly in some cases (when margins changed). Now itis fixed.

• **XY Series point's color and SeriesEventMarker symbol's color reported correctly.**
It is possible that on initiation XY Series point's color and SeriesEventMarker symbol's colorwere not reported correctly (only in version 10.0.1). This is now fixed, and Properties Editorand reading of property gets value correctly.

• **Fixed error when Axis tick at minimum sometimes not drawn.**
Sometimes when Axis minimum is >0, the ticked was skipped.

• **PointLineSeries3D Highlight now works for 2D styled points when hovering over series.**

• **Semitransparent Chart's background now save correctly in raster image format.**
Issue limited to v10.0.1. If Background (Chart or GraphArea) Fill color have sametransparency component, then exported/printed Chart's raster image may have artifacts. Erroris fixed now.

• **MeshModel transparency is taken into account when chart is parsing the OBJ file.**

• **ViewXY RectangleZoomingThreshold property is now obeyed.**
ZoomPanOptions.RectangleZoomingThreshold property controls how far mouse-down andmouse current position should be for zooming to be applied.

• **Y-Axis title is rendered on correct alignment location for various angles.**
Previously y axis title's text and border have been misaligned when rotated it to -90°.

Issues with Undefined Category

• **NuGet package name is LightningChart. It includes all release from v8.0.1**
To avoid fragmentation of packages and minimize confusion we are changing naming of packages for LightningChart® .NET library. From now on primary name for NuGet package is 'LightningChart'. It is same name/package for WPF, WinForms and UWP applications.

In addition, LightningChart.nupkg will contain all minor and major releases from version 8.0.1 up to the latest one.

Backwards Compatibility Breaks: *behavioural changes.*

• **Corrected BarSeries rendering for the small values.**
Now Horizontal and Vertical bars are rendered similarly. There are two special and distinct cases.

First, if Bars.Values[i].Value=0, then bar is not rendered (but label is shown).
Second, if relative value is very small (like during zoom-out), then at least 1px width/height is shown.

Previously Horizontal bar was always shown (even for Value=0) and Vertical bar may disappear if relative bar size on the screen is less that pixel.

• **Fonts can be modified correctly.**
Font sizes in WinForms are now correctly displayed, i.e. font size 8.25 is rendered as a 8.25 pixel font.

• **PolygonSeries rendering region calculation fixed for some very thin polygons.**