

# **What's New in LEF C/C++ Programming Interface**

**Product Version 5.7**  
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## What's New in LEF 5.7 C/C++ Programming Interface

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# About This Manual

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This document provides information on new and changed features for version 5.7 of the C and C++ application programming interface (API) used to read and write Cadence<sup>®</sup> Library Exchange Format (LEF) files.

## How This Document Is Organized

This *What's New* document is organized into the following chapters:

- **New Features**

This chapter describes features that were added since version 5.6 of the LEF API. New features are those that introduce new functionality into the LEF API. Any enhancements made to existing statements to support a new feature are also described in this chapter.

- **Changed Features**

This chapter discusses features that were changed since version 5.6 of the LEF API. Changed features include such things as changes in default behavior, changes in whether keywords and statements are required, and any other changes that do not reflect new functionality.

## Related Documents

The following documents provide detailed information about LEF and DEF, and the LEF and DEF application programming interfaces.

- [DEF C/C++ Programming Interface \(Open Licensing Program\)](#)
- [LEF C/C++ Programming Interface \(Open Licensing Program\)](#)
- [LEF/DEF Language Reference](#)
- [What's New in DEF C/C++ Programming Interface](#)
- [What's New in LEF/DEF](#)

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# **What's New in LEF 5.7 C/C++ Programming Interface**

## About This Manual

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## New Features

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This chapter describes the new features that were added in this release of the LEF application programming interface.

- [Reader Class Routines](#) on page 6
- [Writer Routines](#) on page 6

## Reader Class Routines

The following reader class routines were added in this release:

- lefiOrthogonal
- lefiTwoWidths

For more information on reader class routines, see “LEF Reader Classes” in the *LEF C/C++ Programming Interface (Open Licensing Program)*.

## Writer Routines

The following writer routines were added in this release:

- Layer (Cut)
  - lefwLayerArraySpacing
  - lefwLayerCutSpacing
  - lefwLayerCutSpacingAdjacent
  - lefwLayerCutSpacingArea
  - lefwLayerCutSpacingCenterToCenter
  - lefwLayerCutSpacingEnd
  - lefwLayerCutSpacingLayer
  - lefwLayerCutSpacingParallel
  - lefwLayerCutSpacingSamenet
  - lefwLayerCutSpacingTableOrtho
  - lefwLayerEnclosureLength
  - lefwLayerEnclosureWidth
- Layer (Routing)
  - lefwLayerAntennaAreaDiffReducePwl
  - lefwLayerAntennaAreaMinusDiff
  - lefwLayerAntennaCumRoutingPlusCut



## What's New in LEF 5.7 C/C++ Programming Interface

### New Features

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- ❑ lefwLayerAntennaGatePlusDiff
- ❑ lefwLayerRoutingMinimumcutWithin
- ❑ lefwLayerRoutingMinstepMaxEdges
- ❑ lefwLayerRoutingSpacingEndOfLine
- ❑ lefwLayerRoutingSpacingEOLParallel
- ❑ lefwLayerRoutingSpacingEndOfNotchWidth
- ❑ lefwLayerRoutingSpacingNotchLength
- ❑ lefwLayerRoutingSpacingSameNet
- ❑ lefwLayerRoutingStartSpacingtableTwoWidths
- ❑ lefwLayerRoutingStartSpacingtableTwoWidthsWidth

For more information on writer routines, see “LEF Writer Routines” in the *LEF C/C++ Programming Interface (Open Licensing Program)*.

## **What's New in LEF 5.7 C/C++ Programming Interface**

### **New Features**

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## Changed Features

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This chapter describes the features that were changed in this release of the LEF application programming interface.

- Obsolete Information on page 10
  - Writer Routines on page 10
- Reader Class Routines on page 10

## Obsolete Information

The following information is considered obsolete in version 5.7 of the LEF application programming interface and should not be used. However, it is still included in the parser for backward compatability.

### Writer Routines

The following writer routines are obsolete in this release:

- lefwLayer
- lefwLayerStack
- lefwLayerSpacingAdjacent
- lefwLayerSpacingCenterToCenter

## Reader Class Routines

The following syntax has been added to the listed reader class routines.

### lefiAntennaModel

```
int hasAntennaCumRoutingPlusCut() const;  
int hasAntennaGatePlusDiff() const;  
int hasAntennaAreaMinusDiff() const;  
int hasAntennaAreaDiffReducePWL() const;  
double antennaSideAreaFactor() const;  
double antennaGatePlusDiff() const;  
double antennaAreaMinusDiff() const;  
lefiAntennaPWL* antennaAreaDiffReducePWL() const;
```

For more information, see [“lefiAntennaModel”](#) in the *LEF C/C++ Programming Interface (Open Licensing Program)*.

### lefiGeometries

```
int hasLayerExceptPgNet(int index) const;
```

For more information, see [“lefiGeometries”](#) in the *LEF C/C++ Programming Interface (Open Licensing Program)*.

## What's New in LEF 5.7 C/C++ Programming Interface Changed Features

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### lefiLayer

```
int hasSpacingLayerStack(int index) const;
int hasSpacingParallelOverlap(int index) const;
int hasSpacingArea(int index) const;
int hasSpacingEndOfLine(int index) const;
int hasSpacingParellelEdge(int index) const;
int hasSpacingTwoEdges(int index) const;
int hasSpacingAdjacentExcept(int index) const;
int hasSpacingSamenet(int index) const;
int hasSpacingSamenetPGonly(int index) const;
int hasSpacingNotchLength(int index) const;
int hasSpacingEndOfNotchWidth(int index) const;
double spacingArea(int index) const;
double spacingEolWidth(int index) const;
double spacingEolWithin(int index) const;
double spacingParSpace(int index) const;
double spacingParWithin(int index) const;
double spacingNotchLength(int index) const;
double spacingEndOfNotchWidth(int index) const;
double spacingEndOfNotchSpacing(int index) const;
double spacingEndOfNotchLength(int index) const;
int hasMinimumcutWithin(int index) const;
double minimumcutWithin(int index) const;
int hasMinstepMaxedges(int index) const;
int minstepMaxedges(int index) const;
int hasEnclosureExceptExtraCut(int index) const;
double enclosureExceptExtraCut(int index) const;
int hasEnclosureMinLength(int index) const;
double enclosureMinLength(int index) const;
int hasMaxFloatingArea() const;
double maxFloatingArea() const;
int hasArraySpacing() const;
int hasLongArray() const;
int hasViaWidth() const;
double viaWidth() const;
double cutSpacing() const;
int numArrayCuts() const;
int arrayCuts(int index) const;
double arraySpacing(int index) const;
int hasSpacingTableOrtho() const;
lefiOrthogonal *orthogonal() const;
```

For more information, see [“lefiLayer”](#) in the *LEF C/C++ Programming Interface (Open Licensing Program)*.

### lefiSpacingTable

```
lefiTwoWidths* twoWidths() const;
```

## What's New in LEF 5.7 C/C++ Programming Interface

### Changed Features

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For more information, see [“lefSpacingTable”](#) in the *LEF C/C++ Programming Interface (Open Licensing Program)*.