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## Rybka Aquarium: Using IDeA with Infinite Analysis

I often emphasize that Aquarium's IDeA is designed for interactive analysis. There is nothing wrong with unattended analysis (e.g., overnight), as long as you follow up with interactive analysis. In practice, IDeA analysis will consist of repeated sessions of interactive analysis followed by unattended analysis.

In previous columns, I have described various methods to interact with IDeA and influence the direction of its analysis:

- Focus the analysis on specific moves in the analysis tree by coloring them green.
- Exclude moves in the tree from further analysis by coloring them red.
- Disable the current root position and set a new root in another position.
- Add your own ideas to the analysis queue or let IDeA have a closer look at certain positions by using the "Interactive" buttons: Current Position, Auto-Play, Alternative, All Positions, and Custom Task.
- When analyzing the opening, you can use various sources to collect ideas and feed them into the analysis process:
  - Add moves and variations from opening books (printed or electronic) to your IDeA analysis queue.
  - While browsing a game in Aquarium that contains the position you are analyzing, you can send a range of moves (including variations) to IDeA for analysis.
  - Use Aquarium to search a game database for the position you are analyzing and add all the games (or rather a range of moves from the games, starting with the search position) to the IDeA analysis queue.
  - If you have previously analyzed the position with a different method, you can send all your existing analysis to IDeA.
- Load positions to be analyzed from an EPD file (Analyzed EPD records can also be added directly to the tree).
- Add previously analyzed position from a master tree to the project tree.
- While running infinite analysis, send any variation in the analysis window to the IDeA queue.
- Add infinite analysis variations to a game notation and then send a range of moves (including variations) to the IDeA queue.

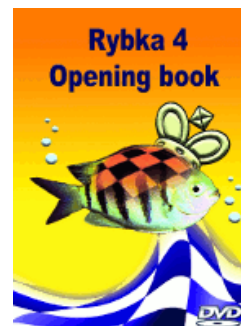
If there is a position or a variation that you want IDeA to analyze, there is more than one way to do that (as you can see) and an experienced IDeA analyst will probably use most of these methods on a regular basis. In this column I will focus on the last two items in this list; i.e., how you can get the best of both worlds by combining IDeA and infinite analysis.

## Choosing a Project

Start by opening the game that you want to use for the analysis. It doesn't matter if it is a database game or if you use the Sandbox for the analysis. Of course the game should contain the position that you are going to analyze, but it can either be a full game, a game fraction or just the position that you are going to analyze.

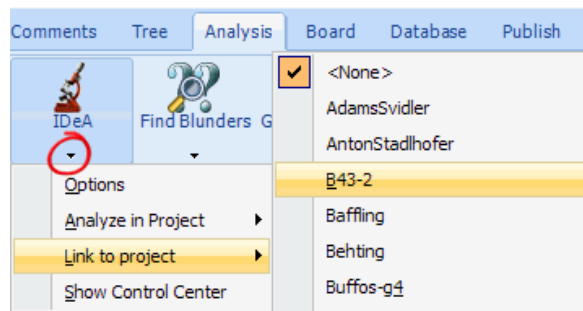
Before sending positions to IDeA, you must choose the project to which the positions should be sent. Switch to the Analysis tab.

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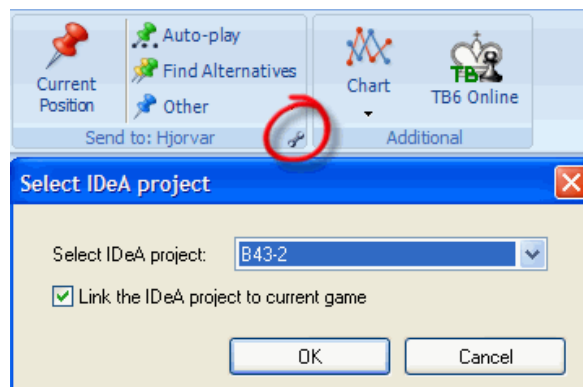
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Linking IDeA project to a game

Here you click the menu portion of the IDeA button and hover over (or click) "Link to project" to display a list of available projects. Select the project you want to link to the game. This is the project to which that your positions will be sent.

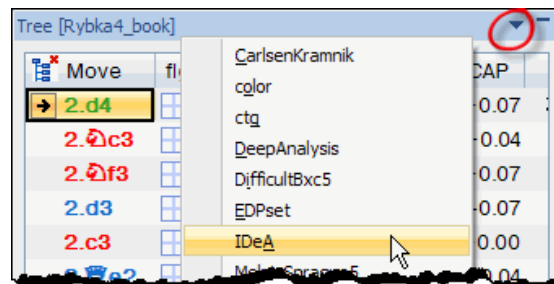
An alternative method is to click the tool button (highlighted in the image below) in the "Send to" group. The "Select IDeA project" dialog box will appear.



Alternative method of linking IDeA project to a game

Here you choose the project that you want to link to the game (in this example I have selected the project "B43-2"), and then create the link by selecting "Link the IDeA project to current game."

If, for some reason, you don't want to link the project to the game, don't select "Link the IDeA project to the current game." In that case you should switch to the IDeA tree configuration, so you can see the project tree in the tree window.



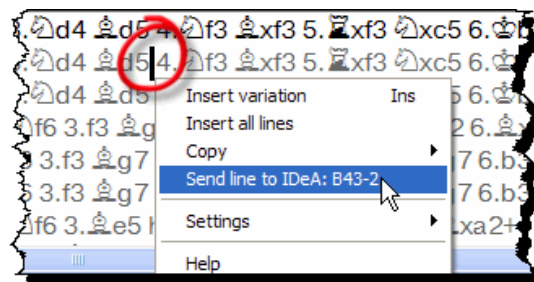
View the IDeA project tree

Click the small, black triangle in the upper-right corner of the tree window and select "IDeA" from the list. The tree window will show the project's analysis tree.

Now that you have selected the game that you want to base your analysis on and connected it to the IDeA project, you can start analyzing and sending positions to IDeA.

### **Sending a variation from the analysis window**

The easiest method of sending a variation to IDeA is to send it directly from the analysis window.



Send a variation directly from the analysis window

You can send any of the variations displayed in the analysis window. Here I have selected the second variation from the top (see the cursor highlighted in the image above), right-clicked, and selected "Send line to IDeA: B43-2" from the menu. Aquarium will send the corresponding positions to IDeA for analysis.

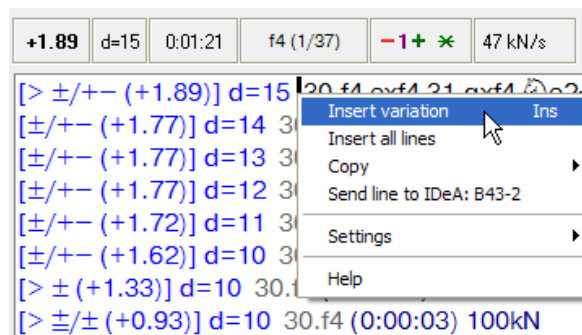
You can use this method when analyzing in single variation mode, multi-variation, and when analyzing simultaneously with several engines. Just choose the variation you are interested in (with a mouse click) and send it to IDeA as described above.

The advantage of this method is that it fast and easy, but on the other hand you don't have control over how many moves from the selected variation are sent to IDeA.

### Sending Moves From the Notation to IDeA

In addition to sending variations straight from the analysis window to IDeA, you can also send a range of moves from the notation to IDeA. When using that feature in connection with infinite analysis, you would start by adding the analysis results to the notation and send them from there to IDeA. The advantage of this approach is that you have more control over which positions are sent to IDeA.

When running infinite analysis, you can add any of the variations shown in the analysis window to the notation. It works similar to sending a variation to IDeA, but instead of selecting "Send to IDeA" from the right-click menu, you select "Insert variation" as shown below.



Add variation to the notation

The selected variation will be added to the notation. You can also press the Ins (or Insert) button to insert the variation. If the focus is on the notation window, Ins will insert the top variation from the analysis window.

23. g3 b4 24. f1 g8 25. g f6  
 26. h6+ g8 27. f5 h5 28. g5 c6  
 29. g3 d4 30. f4 xf5  
 [30...exf4 31.gxf4 b5 32.fh6+ h7 33.f5  
 e7 34.xf7 xg5 35.xg5+ h8 36.f7  
 + g7 37.xd6 f8 38.fgx6 bxc4 +1.84  
 /d16 Deep Rybka 4 w32(0:01:56) 5489kN]  
 31.exf5 e7 32.f6 f8 33.f5 h7 34.  
 d2 \*

Analyzed variation in the notation

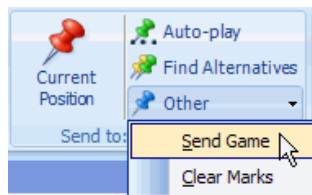
As you can see in the image above, the variation has been added to the notation. You can continue like this and add other variations to the notation. As an example, I have added the analysis of another engine to the notation in the image below.

29. g3 d4 30. f4 xf5  
 [30...exf4 31.gxf4 b5 32.fh6+ h7 33.f5  
 e7 34.xf7 xg5 35.xg5+ h8 36.f7+  
 g7 37.xd6 f8 38.fgx6 bxc4 +1.84/d16  
 Deep Rybka 4 w32(0:01:56) 5489kN]  
 31.exf5 e7 32.f6 f8 33.f5 h7 34. d2  
 [34. h4 h8 35.fgx6 f7 e7 37. g5  
 e6 38.e3 b5 39.cxb5 xb5 40.d5 b7  
 41. g4 g7 42. h4+ h5 43.g4 xf7  
 44.gxh5 +3.07/d19 Stockfish 1.9 JA (0:01:08)  
 69602kN]

Analyzed variations in the notation

Of course, you can also use interactive infinite analysis, moving back and forth in the notation as you follow the variation suggested by the engine while it is still running and test your own ideas. All the moves you make will be added to the notation.

When you are finished with the analysis, you can send all the variations to IDeA. Switch to the Analysis tab in the ribbon, click "Other" in the "Send to" group and select "Send Game" from the menu.



The "Send positions to IDeA" dialog box will be displayed.

Send a range of moves to IDeA

Here you only need to specify "From move," "to move," and "Filter tree." In this example, I'm sending moves thirty to thirty-eight to IDeA. Since "Side" is set to "Both," moves for both sides will be sent. "Include variations" means that both the mainline and variations will be included. The moves in the variations are limited to the same range as the mainline (thirty to thirty-eight). Setting "Filter tree" to the project tree prevents positions that have already been analyzed from being sent to the project and analyzed again. "IDeA project" is set to the project that we selected above (B43-2), so the moves will be sent to the correct project.

Naturally, this method is not limited to sending the results of infinite analysis to IDeA. It applies to the moves in the game regardless of where they came from.

The following sections describe various methods to use infinite analysis to create "food for thought" for IDeA. The results can then be sent to an IDeA project using the methods described above, either directly from the analysis window or by first adding them to the notation and sending them from there.

### Single variation analysis

Single variation infinite analysis is a popular and efficient analysis method. The chess engine focuses on finding the best move, looking deeper and deeper into the position with each iteration. Normally, you are only interested in the latest variation produced by the engine (the top line in the analysis window) when it's analyzing in this mode. When you are satisfied with the results (perhaps after some interactive analysis), you can add the line (called "Principal Variation" (PV)) to the notation. After that you can send it to IDeA although you may choose to wait until you have analyzed some more positions and then send the results in one batch to IDeA.

### Multi-variation analysis

The advantage of multi-variation analysis is that it doesn't only give you information about the best move found by the chess engine, but also the second best, etc., depending on the number of variations that you analyze. It's common to see analysts setting the number of variation to three, four, or five. Keep in mind that it takes longer to complete each iteration when you increase the number of variations.

The image below shows multi-variation analysis with five variations.

+3.71	d=19	0:01:41	f4 (1/37)	-5+ ✖	103
[+- (+3.71)] d=18 30.f4 exf4 31.gxf4 ♟xf4 [± (+0.76)] d=18 30.♟xd4 exd4 31.♟a1 ♟ [± (+0.76)] d=18 30.♟g2 ♟f8 31.♟xd4 cx [± (+0.48)] d=18 30.♟gh6+ ♟f8 31.♟xd4 [= (+0.12)] d=18 30.f3 ♟xf5 31.exf5 ♟e7					

Multi-variation analysis with a clearly best move

It is clear that the best move by far is 30.f4, which has an evaluation of +3.71. White's advantage corresponds to almost four pawns. The evaluation of the second best move is only +0.76; an advantage of less than a pawn. In this case we would only be interested in the best variation and we would not send other variations to IDeA for analysis. Actually, when the evaluation is so high, there is normally little need for extensive IDeA analysis. Many chess players could probably win the game without the help of a chess engine although others might want to do some quick checks using infinite analysis.

In many positions there are several moves with similar evaluations. In such cases you may need much deeper analysis to find out which move is the best, although it often happens that there are actually several equally good moves in a position. If you run multi-variation analysis and see results like those below, you may be interested in further analysis of all the variations.

d=22	0:04:21	♟b8 (10/35)	-4+ ✖	933 kN/s
(+0.24)] d=22 12...♟d7 (+0.24)] d=22 12...♟c8 (+0.28)] d=22 12...♟b8 (+0.28)] d=22 12...♟a5				
<div> <div>Insert variation</div> <div>Insert all lines</div> <div>Copy</div> <div>Send line to IDeA: B43-2</div> <div>Settings</div> <div>Help</div> </div>				

Multi-variation analysis with similar evaluations

The screen-shot shows that the four different moves all have similar evaluations. The evaluation of the top two moves (12...Qd7 and 12...Qc8) is +0.24 and the other two (12...Rb8 and 12...Na5) are not far behind with an evaluation of +0.28. I have decided that all these moves need further analysis by IDeA, so I right-click over the analysis window and select "Insert all lines" as shown in the image. The result is that all four variations in the analysis window will be added to the notation from where I can send them to IDeA using the method described above.

### Exclude Moves From Infinite Analysis

Instead of multi-variation analysis, many Aquarium users prefer a different method with the same purpose. They start the analysis in normal single variation mode. After a while, when the engine has settled on a move, they add the variation to the notation, so it is stored and can be sent to IDeA. Then they exclude the best move from the analysis and let the engine analyze the remaining moves. This is achieved by holding down the Ctrl-key and making a move on the board at the same time, as illustrated in the image below.





Exclude moves by holding down the Ctrl key

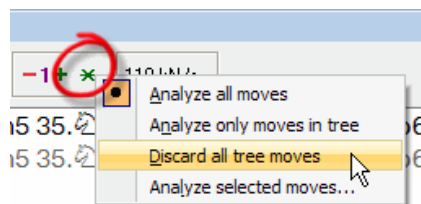
When the remaining moves have been analyzed for a while, the engine will find the second best move (sometimes it may actually turn out to be stronger than the "best move"). The variation is added to the notation and the second best move is also excluded from the analysis by making it on the board while holding down the Ctrl-key. This process can be repeated until you start running into moves that are clearly worse than the best move.

When you are finished, you will have several variations added to the notation. You can send them to IDeA, as described above, by switching to the Analysis tab and selecting Other > Send Game.

Note that this method of excluding moves from infinite analysis can also be used in multi-variation mode and even when you have several engines analyzing at the same time in the same analysis window. Note, however, that some chess engines don't support this feature and ignore requests to exclude moves from the analysis.

### Exclude or Only Analyze Tree Moves

One of the tasks that an experienced IDeA analyst performs regularly is checking the mainline of the analysis. Are the moves found by IDeA actually the best moves? Is IDeA missing some good moves? The user browses the mainline while running infinite analysis in search for improvements. While infinite analysis is running, you can click the small green asterisk at the top of the analysis window as shown below. A menu will be displayed where you can choose which moves to analyze. There are several options here, as shown in the next screen-shot.



Analyze the moves you are interested in

*Analyze all moves* is the default. All legal moves are considered in the analysis.

*Analyze only moves in tree:* This option and the next one can be used for checking the mainline found by IDeA. Since we switched to the IDeA tree configuration before starting the analysis, the project tree is displayed in the tree window. When you select "Analyze only moves in tree," the asterisk changes to a tree icon and only the moves in the tree will be analyzed. It is actually more accurate to talk about all moves displayed in the tree window,

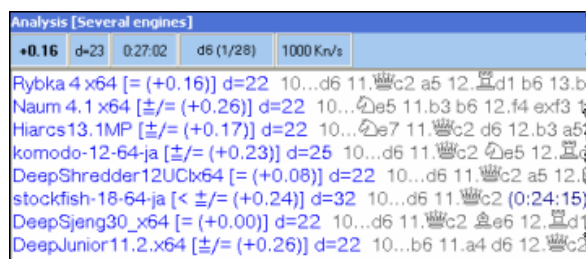
rather than simply the moves in the tree. The is because moves that occur in the notation are displayed in the tree window and are treated as part of the tree when this option is selected. Therefore, it is best to use a "clean" notation when checking the IDeA mainline.

*Discard all tree moves:* Use this option if you want to check if IDeA has overlooked some good moves. If this analysis method turns up with some interesting alternatives, you can send them to the IDeA queue, using the methods described above.

*Analyze selected moves...* Here you can decide precisely which moves are analyzed and which are excluded from the analysis. This option was described in [Infinite Analysis with Rybka Aquarium](#).

## Multi-Engine Analysis

Having several engines analyze a position can be a great source of ideas, as different engines often suggest other moves for the same position. The screenshot below shows eight engines analyzing the same position and they are suggesting four different moves.



Engine	Evaluation	Depth	Time	Moves
Rybka 4 x64	[= (+0.16)]	d=22	0:27:02	10...d6 11.♔c2 a5 12.♚d1 b6 13.b
Naum 4.1 x64	[±/= (+0.26)]	d=22		10...♚e5 11.b3 b6 12.f4 exd3 1
Hiarcs13.1MP	[±/= (+0.17)]	d=22		10...♚e7 11.♔c2 d6 12.b3 a5
komodo-12-64-ja	[±/= (+0.23)]	d=25		10...d6 11.♔c2 ♚e5 12.♚
DeepShredder12UCI64	[= (+0.08)]	d=22		10...d6 11.♔c2 a5 12.♚
stockfish-18-64-ja	[< ±/= (+0.24)]	d=32		10...d6 11.♔c2 (0:24:15)
DeepSjeng30_x64	[= (+0.00)]	d=22		10...d6 11.♔c2 ♚e6 12.♚d1
DeepJunior11.2.x64	[±/= (+0.26)]	d=22		10...b6 11.a4 d6 12.♔c2

Eight engines analyzing the same position

Even when two engines suggest the same move, the variations they give are different. If you want to analyze all the variations in IDeA, start by adding them to the notation (as explained above, right-click in the analysis window and select "Insert all lines" from the menu). After that you can send the variations (or the starting moves of each variation) to IDeA in the same way as we did above.

## Conclusion

IDeA offers a range of tools for interactive analysis that allow you to force IDeA to examine your choice of ideas as to how a position should be handled. In this column we examined how chess engines and infinite analysis can be used to create variations that can be sent to IDeA for analysis. After analyzing the variations themselves, IDeA will expand the analysis by examining alternatives and extending the variations. In many cases this will speed up the analysis process by forcing IDeA to examine moves that it would otherwise need much more time to discover.

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