

Compression Beyond FAQ

Q1 What is Compression Beyond?



Compression beyond is a powerful in-camera feature developed by Basler to **break through GigE bandwidth limits**. You can enable the feature through pylon Viewer.

Q2 What are the possible scenarios to benefit from Compression Beyond?



Compression Beyond feature gives you extra bandwidth beyond the nominal bandwidth capacity of GigE Vision --without requiring extra efforts.

Q3

How much more bandwidth can I expect to obtain?



With Compression beyond feature, frame rates increase in the range of **2 to 3 times** become reality- Depending on the respective image content. Images that contain many redundancies are more compressible.

Q4 Which models are Compression Beyond available with?

Compression Beyond, together with some other powerful Basler unique features are available on all **ace 2 PRO models.**

Does Compression Beyond affect CPU load?

Yes, but minimal for many cases. The following comparison table shows that memory loading is barely affected and the cost on CPU loading is only 3% more in lossless compression.

Test camera: ace 2 PRO GigE camera (a2A5328-4gmPRO)

ompression Beyond Feature	Compression rate	fps	Bandwidth	CPU loading	Memory loading
OFF	N/A	4.2	102.8	17%-34%	48%
ON: Lossless compression	Lossless 70	6	36.7	28%-37%	49%
ON: Lossy compression	Fix Ratio 50	8.4	51.5	36%-48%	48%

Q6 Does Compression Beyond affect my image quality?



No. **Image quality will be maintained in full** when you choose lossless compression. In the meantime, lossy compression is still available for you to find the optimal balance between image size and image quality.

Image Comparison





Original image without Compression Beyond Image with Compression Beyond at compression factor 2.6

Q7 How reliable is Compression Beyond?



It is just as reliable as any Basler GigE or USB 3.0 cameras. Compression beyond feature does not sacrifice the reliability of image data transfer in any way. Our standard deviations test on different vision tasks shows the high reliability of the image results.

Testing methods

Perform pattern matching task with the Compression Beyond feature on in both lossless and lossy modes for 100 images respectively and examine the deviations of the coordinate values (PatternX, PatternY) from those when the feature is switched off.



Test camera: ace 2 PRO GigE camera (model: a2A5328-4gmPRO)

Compression Beyond	Compression	Pattern Matching	
Feature	rate	Pattern X	Pattern Y
OFF	N/A	0.011	0.01
ON: Lossless compression	Lossless 70	0.012	0.023
ON: Lossy compression	Fix Ratio 50	0.009	0.015
Standard Deviation Max-min		0.003	0.013

Q8 Which one should I choose: 1GigE vs. 1GigE+Compression Beyond vs 5GigE?

This diagram give you an idea of the different advantages of each option available. There is no perfect solution that compromises nothing, and finding the right solution is always about finding the right balance between cost, quality and time.



Q9 How does Compression Beyond work?



The basic principle of lossless compression of image data is based on the use of redundancies. Images that contain many redundancies are more compressible.

Original Data



Compressed Data



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