

How Bionano Genomics Increased Compliance with Regulations Using Jscrambler



*“We needed our Node.js application protected to satisfy **multiple data protection regulations** in customer clinical environments. Jscrambler did that for us and it was **easy to incorporate** into our tech landscape”*

Scott Way, Director of High Performance Computing and Genome Visualization



HEALTHCARE

AT THE FOREFRONT OF HEALTHCARE TECH

Bionano Genomics produces a high throughput imaging system called the Saphyr® that can rapidly **identify genome variation**. Large structural variations are responsible for many diseases and conditions, including cancers and developmental disorders. Saphyr detects structural variations ranging from 500 bp to megabase pairs in length and offers assembly and discovery algorithms that far **outperform sequencing-based technologies** in sensitivity.

THE KEY ROLE OF COMPLIANCE

With customers spanning many industries and domains, Clinical research environments represent a targeted and growing vertical for Bionano Genomics. Medical centers, hospitals, and universities use their instrument to study a variety of diseases. Their unique technology can **accelerate analyses of genetic variants** such as Facioscapulohumeral muscular dystrophy (FSHD) that are difficult or impossible for other technologies to identify accurately.

These environments are under more and **more scrutiny on how they protect patient information** - namely through data protection regulations like HIPAA, Safe Harbor, CCPA, and GDPR. They are also subjected to other application level regulations like Fed Ramp (NIST), GA4GH, OWASP, and ISO 27002, that pertain to the overall security and architecture.

CHALLENGES

Add security layers to protect data

Protect client and server-side JavaScript logic

Prevent illegitimate access to JavaScript source code

Protect the company's investment in its own technology

SOLUTION

Jscrambler Code Integrity:

Resilient JavaScript obfuscation

Built-in protection against reverse-engineering tools

Anti-tampering and anti-debugging capabilities

RESULTS

Provided the most resilient JavaScript protection

Satisfied the needs from regulation requirements for code protection

Protected the intellectual property of the company's technology

Successfully integrated within 1 day

All issues solved quickly with Jscrambler's premium support

CHALLENGES

Each time that Bionano Genomics engages an enterprise-level clinical environment, they are subjected to a **rigorous security audit**. By interacting with many security organizations globally, they gained an in-depth understanding of what these security organizations expected.

Bionano Genomics chose **Node.js** as their visualization platform as it facilitated reaching the widest audience of users (macOS, PC, and Linux). It also provided a large array of visualization tools such as D3.js, ThreeJS, and ChartJS that allow creating rich interactive genomic maps for customers to explore.

Bionano software is free to encourage the use of Saphyr generated data. Anyone can download and start their own Bionano Access Server. Bionano Genomics needed a way to **protect their downloaded client and server side JavaScript logic to satisfy multiple security regulations**.

The Bionano Genomics system itself is designed not to hold protected private information (PPI) so the company did not face significant liability to be concerned with. However, as an extra precaution and with the goal of being as compliant as possible, the company understood the need for JavaScript code protection.

*“Jscrambler was the **only** product we found that **could not be cracked.**”*

In search of the optimal solution, Bionano Genomics tested some JavaScript obfuscation solutions but found out that these could be easily reversed and/or debugged. **Jscrambler was the only solution that passed all their tests** and which they were not able to reverse.

This implementation of Jscrambler was greatly derived from the need to comply with several different regulatory requirements. In the specific case of Bionano Genomics, the regulations that apply to their clinical customers vary

depending on their local principalities. Some regulations like ISO 27001 and 27002 specifically require source code protections while others have more general data protection and or encryption requirements. Jscrambler does not solve all of Bionano Genomics' security concerns, but it **provided what the company needed to protect the source code enough to satisfy all regulations** in that regard.

“Beyond providing data protections, **Jscrambler protects the investment made in our technology.**”

Then, there’s also the matter of protecting intellectual property. Bionano Genomics’ system provides comprehensive genomic variation data for review. Their software does this in an elegant way that may seem straightforward - but, under the covers, there is a lot of sophisticated work that has been done. Jscrambler goes beyond data protection to **protect the investment** that the company has made in its technology.

```

1  (function (window) => {
2    var canvas = window.document.getElement
3    if (canvas.getContext) {
4      var ctx = canvas.getContext('2d');
5
6      ctx.fillRect(25, 25, 100, 100);
7      ctx.clearRect(45, 45, 60, 60);
8      ctx.strokeRect(50, 50, 50, 50);
9    }
10 }) (window)

```

Original

Obfuscated

*“This also makes our clinical customers more comfortable when installing our system since they are **ingrained with data protection policies.**”*

RESULTS

Thanks to the source code protection provided by Jscrabler, Bionano Genomics now obfuscates its code and is capable of preventing debugging. This allows them to satisfy the security concerns of their Clinical customers and continue using the platform that gave them the best value.

As for the implementation of Jscrabler itself, Bionano Genomics simply had to add the Jscrabler product to their DevOps scripts and as a result were able to deploy obfuscated code internally and in their installation files **within a day.**

The company uses Ansible to deploy software internally and to automate installation builds and was also able **to incorporate the Jscrabler CLI into their automation scripts easily.**

And even though their product is fairly complex and probably larger than most Node.js projects, Bionano Genomics only ran into some file count limitations but were able to **solve it quickly with Jscrabler’s support.**



CONTACT US

If you want to know more about how Jscrambler can help you
Secure your JavaScript and HTML5, don't hesitate to contact us

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