

Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
The Library of Congress

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In the Matter of )

) Docket No. 16–CRB–0003–PR (2018–  
) 2022)

DETERMINATION OF RATES AND )  
TERMS FOR MAKING AND )  
DISTRIBUTING PHONORECORDS )  
(PHONORECORDS III) )

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**WRITTEN DIRECT TESTIMONY OF NICHOLAS HARTEAU**

(On behalf of Spotify USA Inc.)

**Introduction**

1. My name is Nicholas Harteau. I am the Vice President of Engineering and Infrastructure for the Spotify group of companies (“Spotify”) and an employee of Spotify USA Inc. I joined Spotify in 2011 as Engineering Manager, before becoming VP of Engineering and Infrastructure in 2014.

2. Prior to joining Spotify, I was the Engineering Manager at Yahoo! Inc., from September 2005 to November 2011. I was an engineer/partner at Stasis Engineering from 2004 to 2005, and, prior to that, Director of Technology at CoreComm.

3. As VP of Engineering and Infrastructure at Spotify, I oversee a team of [REDACTED] employees, most of whom are responsible for operating and scaling the “backend” of the service—the systems and algorithms that make the system work for users behind the scenes. I report to Oskar Stål, the Chief Technology Officer. I also play an active role in managing the general technology development and engineering strategy of Spotify.

4. My testimony will provide an overview of the technological investment that Spotify has made and continues to make in its technological infrastructure. As I explain below,

in this cutting-edge industry, Spotify must continuously engage in innovation to ensure that we are delivering the best product to our users.

**Spotify's Costly Technological Infrastructure and High Operating Costs**

5. My testimony today focuses only on the costs associated with maintaining Spotify's *backend* technological platform: that is, the research and development ("R&D") costs, operating costs, and capital expenditures associated with developing and maintaining the streaming platform. These costs do not include the "frontend" costs associated with the customer-facing Spotify product itself. (Frontend costs include, for example, the time and resources invested in innovative features of the Spotify service, about which my colleague Jim Lucchese will testify.)

6. Spotify's R&D spending is designed to create the best possible user experience for listeners. The Spotify app makes the user feel as if she has the entire world's music available in the palm of her hand. This is far from simple. Making the delivery of music seamless to users requires enormous operating costs, capital expenditures, and R&D spending.<sup>1</sup> I discuss these below.

7. Spotify's infrastructure team has built a streaming platform that delivers over 30 million tracks to over 100 million active users worldwide. To create this platform, Spotify has invested significantly in R&D.

8. In 2011, infrastructure R&D costs totaled [REDACTED]

[REDACTED] And, in

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<sup>1</sup> Operating costs are recurring non-personnel costs to run Spotify's infrastructure and range from the electric bill for computer equipment to payments to service providers such as Google. Capital expenditures are one-time costs such as purchasing a server. R&D spending includes the costs to research and develop infrastructure, such as personnel expenses.

the first half of [REDACTED]  
[REDACTED]

9. This number is projected to [REDACTED]  
[REDACTED] During the 2018-2022 period, I  
expect Spotify's infrastructure R&D costs [REDACTED]

10. Spotify's [REDACTED]  
[REDACTED] Our recent Google Cloud  
Platform ("GCP") project is just one example of a current substantial technological investment  
Spotify is making in our efforts to continuously scale our platform to match the needs of our  
users. I describe this recent project below.

11. [REDACTED]  
[REDACTED] This approach gives the majority of Spotify's customers instant access to music. But  
as Spotify grew quickly in users, markets, and features, keeping pace with scaling demands  
required ever-increasing amounts of resources. The way our engineers saw it, [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

12. However, Spotify has a large and complex backend, [REDACTED]  
[REDACTED] to GCP became, and is, an enormous—and costly—task. Spotify is not only  
[REDACTED] and GCP, but Spotify must also shift  
user traffic from one to the other, and, in doing so, maintain a high quality of service for its  
users. It's not simply a flip-of-the-switch operation.

13. Thus, [REDACTED]  
[REDACTED] We look to [REDACTED]  
[REDACTED] but do anticipate other projects to take over. [REDACTED]  
[REDACTED]  
[REDACTED] to take time, effort, and enormous amounts of expense to manage and implement.

14. R&D costs are one aspect of Spotify's investment in its technological backend, and our GCP project involves both R&D costs as well as operating expense costs. Our infrastructure operating costs totaled [REDACTED]  
[REDACTED]

15. Spotify further anticipates incurring non-R&D infrastructure costs of [REDACTED]  
[REDACTED] These costs are necessary to provide our service, and to ensure that Spotify remains competitive in delivering a great user experience. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

16. The [REDACTED] infrastructure that allows Spotify to make personalized listening recommendations (powering, just as one example, Discover Weekly) costs an estimated [REDACTED]

[REDACTED] The infrastructure for providing [REDACTED]  
costs [REDACTED]  
[REDACTED]

17. Spotify also has substantial infrastructure costs unrelated to data. These costs are incurred to improve, broaden, and deepen the user experience. For example, Spotify has invested substantially in the ability of its users to listen to music on a variety of devices. The Spotify Connect system allows users to listen to Spotify on Wi-Fi speakers, TVs, and other devices using the Spotify app as a remote control. The associated infrastructure costs to set up this feature are at least an estimated [REDACTED]

18. In sum, Spotify’s investment over the past five years in creating and supporting its streaming service (including R&D, capital and operating expenditures) exceeds [REDACTED] [REDACTED] during the 2018-2022 rate period.

**High Infrastructure Costs are Essential to Spotify**  
**Delivering a Seamless User Experience**

19. Spotify cannot simply cut costs in order to accommodate an unexpected royalty rate increase or to improve margins. [REDACTED] [REDACTED] and in order to maintain that position we must continue to invest in content delivery costs. Attempting to decrease costs in one place to accommodate for higher costs (*i.e.*, the GCP transition) in another would only have the adverse effect of restricting and decreasing our listeners’ use of the service.

20. If Spotify’s other costs—for example, royalties—were to increase, then my team would have to look for ways to cut costs, with results against the interests of users. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

21. A third option would simply be delivering a lower quality of service to the user.

[REDACTED]

[REDACTED]

[REDACTED] Because Spotify tries very hard to make the user feel as if she has the world's music on her phone, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

22. In sum, it would be simply extremely difficult to cut costs without cutting user experience.

**Spotify Must Continue Innovating to Grow the Overall Industry Pie, and This Requires Costly Technological Investment**

23. Spotify is continuously asking: how do we ensure that we are giving consumers what they are looking for in the new digital age where the shelf life of every innovation is only a few years? Today, we tout our innovations—our product features, platform scope, and predictive capabilities—as value propositions to encourage more users than ever to listen to more music, and greater variety of music (as James Lucchese and Will Page will testify to). But likely, the shelf life of these new innovations may only be a few years. [REDACTED]

[REDACTED]

Short of evolving to meet that demand, the consumer interest in actually paying for the *experience* of music will at best stagnate, and at worst stop.

24. The music industry has never stood still. Spotify is committed to pushing the envelope on streaming and on leading the product innovation and revolution. Once we stop doing so, the overall music industry pie stops growing. The more Spotify can encourage users to

listen to music, the greater the industry pie. This requires enormous amounts of technological investment. As my testimony has shown, content is only but one piece of the larger puzzle. Our technological contribution—and the capital investments, costs, and risks we take on—drives our product. Without it, we would be just another cassette manufacturer, confined to the rubble of history.

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**DECLARATION OF NICHOLAS HARTEAU**

I, Nicholas Harteau, declare under penalty of perjury that the statements contained in my Written Direct Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief. Executed this 31 day of October 2016 in New York, New York.

  
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Nicholas Harteau