



**Packet Clearing House**  
572B Ruger Street, Box 29920  
The Presidio of San Francisco  
San Francisco, California  
9 4 1 2 9 - 0 9 2 0 U S A  
+ 1 4 1 5 8 3 1 3 1 0 0 main  
+ 1 4 1 5 8 3 1 3 1 0 1 fax

John Jeffrey  
john.jeffrey@icann.org  
General Counsel  
ICANN

Thursday, December 12, 2019

Mr. Jeffrey:

Packet Clearing House, a 501(c)(3) not-for-profit public-benefit organization, has provided the domain name service for the .ORG domain for the past fifteen years – first via a chain of outsourcing from ISOC to PIR to Afiliias to Verisign to PCH, and subsequently from ISOC to PIR to Afiliias to PCH. Although the contract between Afiliias and PCH is not a public document, by agreement with Afiliias, we are herewith disclosing some of the operational costs of maintaining the .ORG domain. Our experience of more than twenty-five years operating the first and largest anycast DNS network in the world, as well as providing the DNS for .ORG and the same service to hundreds of other TLDs, has given us some insight into the relationship between operational costs and reliability. Please find appended our thoughts with respect to the proposed transition of the .ORG domain.

In summary, our conclusion is that **the decreased operational spending necessary for any commercial purchaser to break even would result in an increase from zero down-time to, on average, slightly more than three days without service each year.**

Many of the most important institutions upon which our society depends rely on .ORG domains for the provision of critical public services, e.g., UN.org, WorldBank.org, ICRC.org, GDACS.org, IANA.org, Wikipedia.org, IATA.org, ISID.org, and Mozilla.org. .ORG domains are used for air traffic control, containment of communicable disease, and verification of nonproliferation of weapons of mass destruction, among many other critical real-time functions. **Three days per year of interrupted communications for millions of not-for-profit organizations would unacceptably damage the stability and functionality of the Internet, and more broadly of society globally.**

We believe that stability and functionality should be central to any consideration by ICANN of change of control or contract modifications in relation to the .ORG TLD. As we demonstrate, the proposed transaction, or any financially-similar one, guarantees a disastrous effect on stability. Please do not approve it.

Thank you for your time and attention,



James Mitchell  
Domain Services Director  
Packet Clearing House



Bill Woodcock  
Executive Director  
Packet Clearing House

cc: Goran Marby, goran.marby@icann.org,  
Maarten Botterman, maarten.botterman@board.icann.org  
Cyrus Namazi, cyrus.namazi@icann.org  
Security and Stability Advisory Committee, ssac-staff@icann.org

## Regarding the Operational Stability of the .ORG Domain

Thus far the public discourse surrounding the next transition of the .ORG domain has been focused exclusively on the income (wholesale price) side of the equation, with no discussion of the expense side. Income and expense are two sides of the same coin, and any purchaser will give equal scrutiny to both. Perhaps the public assumption is that the status quo will simply continue. But that is not the case. If .ORG is transferred from the non-profit sector to a private beneficiary, the non-profit funds that have paid for the vast majority of .ORG's operational costs – USD 29M per year, approximately 96% – by law cannot follow, and the many users of the .ORG domain will suffer significant technical and operational harm in the form of down-time and interrupted communication.

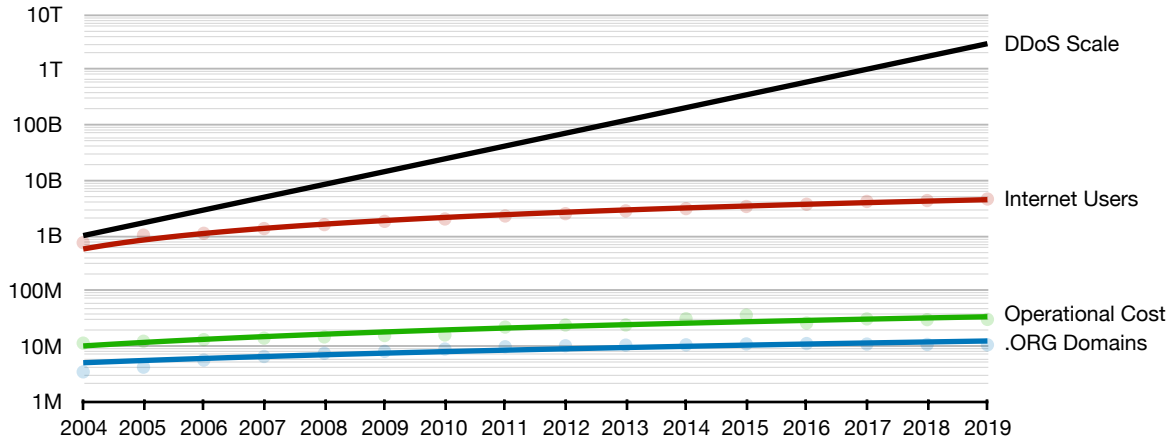
The vast majority of the labor and expense of operating a reliable domain is in the deployment and operation of the network of equipment that publishes the domain zone data and answers end-user queries. Those queries must be answered in the hundreds of thousands per second under normal circumstances and in the billions per second during denial of service attacks. The following are just a few examples of the many unavoidable categories of expense involved in supporting the operational infrastructure of .ORG:

Space	Transit	Warehousing
Power	IX contributions	Stocking of spares
Access	Peering coordination	Insurances
Deployment	Provisioning	Crossconnects
Hardware amortization	Abuse-desk staffing	Remote hands
Customs duties and clearing	Shipping and fulfillment	RIR fees

Multiplied across hundreds of locations, these expenses, necessary to maintain reliable communications infrastructure for .ORG registrants and the entire Internet of users who communicate with them, are significant. When all work properly, as they have for the past fifteen years, they are invisible to the public.

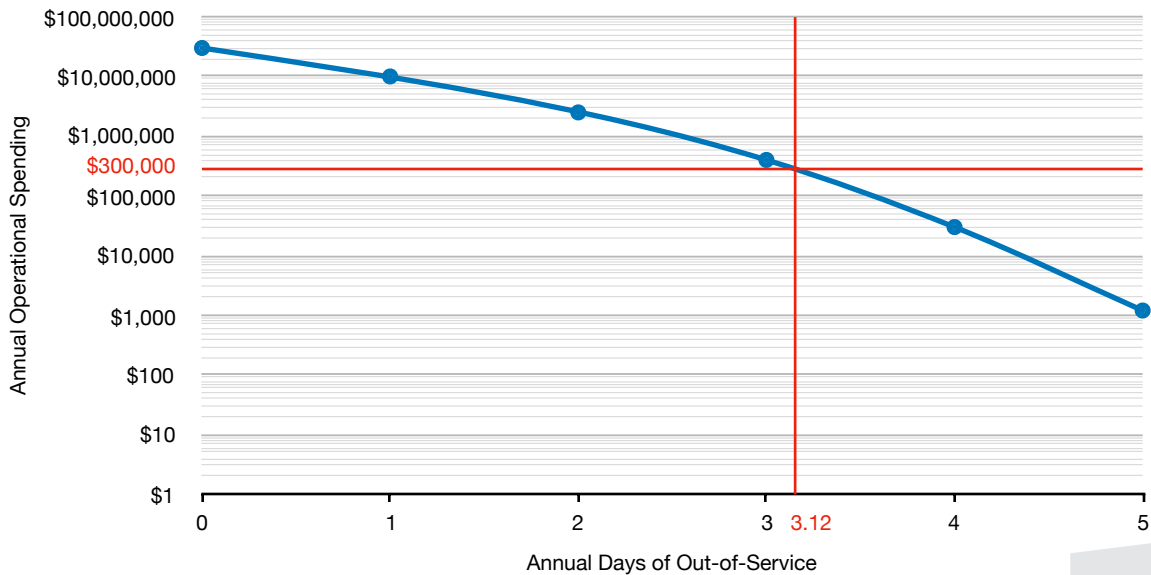
The public has come to see .COM, .NET, and .ORG, as the benchmarks for reliable domain name service. Indeed, .ORG has had no public-facing down-time since PCH began providing its DNS fifteen years ago. We are engineers, and we understand that, although larger and more sophisticated attacks are always to come in the future, fortunate favors the prepared. Continuous preparation for such attacks is what has allowed .ORG registrants uninterrupted enjoyment of the utility of their domains for the past fifteen years.

The cost of that preparation has grown over time. As the number of .ORG registrants has grown threefold since 2004 from 3.4M to 10.5M, the Internet has grown sixfold from 745M users to 4.6B users, and the size of large DDoS attacks has grown more than a thousandfold from a gigabit to multiple terabits. Consequently the annual operational cost necessary to ensure the reliable and performant availability of .ORG has grown during that same period from USD 11M to USD 30M.



The inverse correlation between the expense of operational investment and the amount of downtime is incontrovertible. The less spent on operational expense, the greater the number of events that exceed the threshold necessary to disrupt the network. By analogy, the degree of investment in engineering and construction presages the lifetime of a building, because events that exceed the higher threshold necessary to destroy a better-engineered building are less frequent.

In an informal survey of authoritative DNS operators and the public record, which is inclusive of but does not attempt to normalize the many variables of geography, economy, and scale, we find roughly this relationship between operational spending and days out of service:



If the .ORG domain is sold for USD 1.135B, wholesale price and number of domains remain unchanged over the remaining nine years of the delegation (USD 900M gross), and operational reliability is maintained (at a cost of USD 270M), the buyer would take a net loss of USD 470M, or -6.33% CAGR. Private equity does not purposefully enter into loss-making deals. We may therefore conclude that the above scenario is not the intended outcome of the proposed sale.

If the .ORG domain is sold for USD 1.135B, prices are increased by 10% annually (USD 1.357B gross), and operational reliability is maintained (USD 270M), the buyer would take a net loss of USD 47M, or -0.47% CAGR. So we may therefore conclude that this also is not the plan.

If the .ORG domain is sold for USD 1.135B, prices are increased by 10% annually (USD 1.357B gross), and operational spending is slashed by 99%, (USD 2.7M), the buyer would make a net gain of USD 220M, or 1.99% CAGR, while increasing down-time to more than three days per year.

1.99% CAGR is not a return for which private equity would typically take this magnitude of risk. The unavoidable conclusion is that any private equity buyer who spends \$1.135B to buy the .ORG domain must not only increase prices by *more than* 10% annually, but also cut operational costs to the minimum levels we see available at the low end of the market, with disastrous consequences for .ORG registrants and the public who depend upon them.

The upper limit of any commercial transaction which retains current operational reliability without increasing pricing is USD 630M at 0% CAGR (which would not attract private equity), or USD 406M at 5% CAGR (which might), and ISOC has stated that they've already turned down many offers in this range as being fundamentally unappealing. We conclude that there simply does not exist a price which simultaneously appeals to ISOC, is commercially viable, and does not sacrifice the stability and functionality of critical core functions of the Internet.

Turning to the present mechanism by which the costs of operational reliability for the .ORG domain are met, it is worth remembering that the .ORG domain has been not only a domain *for* non-profits, but also a domain *by* non-profits. Of the USD 30.3M 2019 operational cost, 29M was met through tax-deductible contributions from PCH's many donors, and 1.3M came indirectly from .ORG registration revenue. Under IRS tax law, tax-deductible donations to non-profits cannot accrue to the benefit of a for-profit. Therefore if .ORG is transferred to a for-profit entity, we cannot ask our donors to continue to subsidize its operation, 96% of .ORG's current operational funding will disappear, and the reliability of its operation will sink from that of .COM and .NET to the least-common-denominator of commodity domains, which generally suffer several days of outage per year.

As a not-for-profit public-benefit organization, PCH has been uniquely able to provide service appropriate to .ORG's constituency: besides bringing to bear benefits of scale, PCH is free from the need to maximize financial return. Consequently, we are able to provide high-performance service equally throughout the world, including *at no lesser level of service* the impoverished and otherwise challenged regions where non-profits do their most valuable and demanding work. By contrast, the need to maximize returns constrains the investment focus of for-profit DNS operators to the financial centers of the global north. The non-profit organizations, associations, and projects that .ORG is intended to serve exist in all countries, rich and poor, from the International Committee of the Red Cross in Geneva to clean drinking water projects in Namibia and rural education projects in Mongolia. All are equally deserving of excellent, continuous, and trouble-free service. Non-profits strive to serve the neediest among us, and they do not deserve to simultaneously struggle with communications outages.

**Please do not approve this or any other any transfer of control that cannot demonstrate the financial ability and commitment to maintain operational reliability of the .ORG domain.**