

# REMEMBERING JON: Looking Beyond the Decade

*Vint Cerf*  
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A decade has passed since Jon Postel left our midst. It seems timely to look back beyond that decade and to look forward beyond a decade hence. It seems ironic that a man who took special joy in natural surroundings, who hiked the Muir Trail and spent precious time in the high Sierras was also deeply involved in that most artificial of enterprises, the Internet. As the Internet Assigned Numbers Authority (IANA) and the RFC editor, Jon could hardly have chosen more polar interests. Perhaps the business of the artificial world was precisely what stimulated his interest in the natural one.

As a graduate student at UCLA in the late 1960s, Jon was deeply involved in the ARPANET project, becoming the first custodian of the Request for Comment note series inaugurated by Stephen D. Crocker. He also undertook to serve as the "Numbers Czar" tracking Domain Names, Internet Addresses, and all the parameters, numeric and otherwise, that were key to the successful functioning of the burgeoning ARPANET and, later, Internet protocols. His career took him to the east and west coasts of the United States but ultimately led him to the University of Southern California's Information Sciences Institute (ISI) where he joined his colleagues, Danny Cohen, Joyce K. Reynolds, Daniel Lynch, Paul Mockapetris and Robert Braden, among many others, who were themselves to play important roles in the evolution of the Internet.

It was at ISI that Jon served longest and as the end of the 20th Century approached, began to fashion an institutional home for the work he had so passionately and effectively carried out in support of the Internet. In consultation with many colleagues but particularly with Joseph Sims of the Jones Day law firm and Ira Magaziner, then at the Clinton administration White House, Jon worked to design an institution to assume the IANA responsibilities. Although the path to its creation was rocky, the Internet Corporation for Assigned Names and Numbers (ICANN) was officially created in early October, 1998, just two weeks before Jon's untimely death on October 16.

In 1998 there were an estimated 30 million computers on the Internet and an estimated 70 million users. In the ensuing decade, the user population has grown to almost 1.5 billion and the number of servers on the Internet now exceeds 500 million (not counting episodically connected laptops, personal digital assistants and other such devices). As this decade comes to a close, the Domain Name System is undergoing a major change to accommodate the use of non-Latin character sets in recognition that the world's languages are not exclusively expressible in one script.

A tidal wave of newly Internet-enabled devices as well as the increasing penetration of Internet access in the world's population is consuming what remains of the current IPv4 address space, driving the need to adopt the much larger IPv6 address space in parallel with the older one. Over three billion mobiles are in use and roughly 15% of these are already Internet-enabled.

Jon would take considerable satisfaction knowing that the institution he worked hard to create has survived and contributed materially to the stability of the Internet. Not only has ICANN

managed to meet the serious demands of Internet growth and importance in all aspects of society, but it has become a worked example of a new kind of international body that embraces and perhaps even defines a multi-stakeholder model of policy making. Governments, civil society, the private sector and the technical community are accommodated in the ICANN policy development process. By no means a perfect and frictionless process, it nonetheless has managed to take decisions and to adapt to the changing demands and new business developments rooted in the spread of the Internet around the globe.

Always a strong believer in the open and bottom-up style of the Internet, Jon would also be pleased to see that the management of the Internet address space has become regionalized and that there are now five Regional Internet Registries cooperating on global policy and serving and adapting to regional needs as they evolve. He would be



*Photo: The Associated Press*

equally relieved to find that the loose collaboration of DNS root zone operators has withstood the test of time and the demands of a hugely larger Internet, showing that their commitment has served the Internet community well.

As the very first individual member of the Internet Society he helped to found in 1992, Jon would certainly be pleased that it has become a key contributor to the support of the Internet protocol standards process, as intended. The Internet Architecture Board and Internet Engineering and Research Task Forces as well as the RFC editing functions all receive substantial support from the Internet Society. He might be surprised and pleased to discover that much of this support is derived from the Internet Society's creation of the Public Internet Registry to operate the .ORG top level domain registry. The Internet Society's scope has increased significantly as a consequence of this stable support and it contributes to global education and training about the Internet as well as to the broad policy developments needed for effective use of this new communication infrastructure.

As a computer scientist and naturalist, Jon would also be fascinated and excited by the development of an interplanetary extension of the Internet to support manned and robotic exploration of the Solar System. This very month, the Jet Propulsion Laboratory will begin testing of an interplanetary protocol using the Deep Impact spacecraft now in eccentric orbit around the sun. This project began almost exactly ten years ago and is reaching a major milestone as the first decade of the 21st Century comes to an end.

It is probable that Jon would not agree with all the various choices and decisions that have been made regarding the

Internet in the last ten years and it is worth remembering his philosophical view:

"Be conservative in what you send and liberal in what you receive."

Of course, he meant this in the context of detailed protocols but it also serves as a reminder that in a multi-stakeholder world, accommodation and understanding can go a long way towards reaching consensus or, failing that, at least toleration of choices that might not be at the top of everyone's list.

No one, not even someone of Jon's vision, can predict where the Internet will end up decades hence. It is certain, however, that it will evolve and that this evolution will come, in large measure, from its users. Virtually all the most interesting new applications of the Internet have come, not from the providers of various Internet-based services but from ordinary users with extraordinary ideas and the skills to try things out. That they are able to do this is a consequence of the largely open and non-discriminatory access to the Internet that has prevailed over the past decade. Maintaining this spirit of open access is the key to further development and it seems a reasonable speculation that if Jon were still with us, he would be in the forefront of the Internet community in vocal and articulate support of that view.

A ten-year toast seems in order. Here's to Jonathan B. Postel, a man who went about his work diligently and humbly, who served all who wished to partake of the Internet and to contribute to it, and who did so asking nothing in return but the satisfaction of a job well done and a world open to new ideas.

