Top Ten Questions about XNS

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1. What is XNS?

XNS (eXtensible Name Service) is a new XML-based protocol and open-source platform for universal addressing, automated data exchange, and privacy control. XNS uses a new technology called web agents that allows publishers and subscribers of information to exchange, link, and synchronize XML documents over any digital network. In essence, XNS gives web agents a common XML vocabulary to "speak," as well as a global naming and addressing service for finding each other on the Internet.

Like DNS, XNS is a globally distributed service that can be implemented by any ISP, portal, corporation, university, or other network service provider. Unlike DNS, however, all XNS agencies and agents enter into registration agreements incorporating global terms specified by the XNS Public Trust Organization (XNSORG), an independent non-profit organization responsible for governance of the XNS global trust community.

2. What is a universal address?

A single address for all communications—email, phone, fax, web pages, instant messaging, even postal mail. The reason it is universal is that it is actually the address of a web agent that resolves it into whatever specific communications network address (phone number, fax number, email address, etc.) is needed to complete a particular communications connection. For this reason a universal address offers four other breakthrough benefits:

- It never needs to change no matter how often you move, change jobs, change ISPs, etc.

- It can automatically synchronize electronic business cards (e-cards) and other personal information with other individuals and businesses anywhere over the net.

- It will always protect your privacy—an XNS universal address is *unspammable*.

- It can be as simple as your name—up to 64 characters, in any Unicode language.

3. What are web agents?

Web agents are to conventional software agents (computer programs that act on your behalf) what hypertext is to conventional text. This means web agents are computer programs that form links with each other in the same way web pages are linked to each other—with three big differences. First, web agents create these links *automatically* when triggered by their owner. Second, the two agents *negotiate the terms and conditions governing the link* and store the resulting "link contract" right in the link. Third, once a link is created, any changes to either the link contract or the data it covers can be *automatically synchronized* by the two agents—in either direction across the link. For more information, see *How Web Agents Work*.

4. How does XNS protect privacy?

By governing every XNS data exchange with a legally binding privacy contract. To understand this, we must start by explaining that there are two types of agents in XNS: personal agents, which represent individual users or households, and business agents, which represent legal entities like corporations, governmental agencies, universities, etc. The first time any XNS personal agent exchanges data with any XNS business agent, they use the *XNS protocol* to negotiate an *XNS privacy contract*—an actual XML document stored by both agents. This contract specifies the privacy and security terms governing the data to be exchanged, including the specific *privacy permissions* and *synchronization permissions* granted by the data owner.

Besides recent laws recognizing the legality of electronic agreements, what gives XNS privacy contracts particular force is the XNS legal infrastructure. All XNS agents and agencies must be registered under an XNS registration agreement, which incorporates the XNS Global Terms, maintained by XNSORG. Under these terms, each registrant agrees to respect the privacy and security of all other XNS users, to recognize the legal enforceability of the privacy contracts negotiated by their agent, and to use the dispute resolution process specified by XNSORG. The result is a self-reinforcing global trust community that grows stronger with each new member. For more information, see the XNS Privacy summary.

5. Is XNS patented?

Yes. The web agent technology on which it is based was developed by OneName Corporation (originally Intermind Corporation) and is covered by three U.S. patents, one Australian patent, and a number of other U.S. and international patents pending. These patents have been licensed to XNSORG to become the sole global governing authority for XNS. XNSORG sublicenses these patents at no charge to all members of the XNS community (every XNS agency and agent joins this community when it signs their XNS registration agreement which includes the XNS Global Terms).

6. Will XNS replace DNS?

No—no more than DNS replaced phone numbers. As a naming and addressing service, XNS operates at a higher level than DNS. DNS is designed to resolve a name into the address of an Internet host computer. XNS is designed to resolve a universal address into any type of address on any type of communications network. You could say that XNS is to DNS what

DNS is to a phone number. (And in fact XNS uses DNS to resolve the Internet address of an XNS agency.)

7. Why are there exactly three top-level namespaces in XNS?

For the same reason there are three major sections to a typical modern phone book: the white pages (names of people), the gray pages (names of businesses), and the yellow pages (names of general categories). This reflects a key underlying distinction between these three types of names: their intellectual property context. As the table below shows, generic names (like yellow pages categories) are by definition "general" and cannot carry intellectual property rights. Proper names can be separated into those that are used in commerce—business names—and those that are not—personal names.

Table 1: XNS Namespaces

	Personal	Business	General
Generic?	No (proper names)	No (proper names)	Yes (generic names)
Used in commerce?	No	Yes	Yes
Namespace prefix	=	@	+

Since there are just these three top-level namespaces, the decision was to use the simplest possible syntax to distinguish them—a single leading character. Due to their current usage in Internet email address and search engine syntax, the natural choices for the business and generic namespaces were "@" and "+", respectively. "=" was chosen for the personal namespace because it was visually distinctive and easy to remember—all people are created equal.

8. How do I register an XNS agent and universal address?

The same way you register an email account at an ISP or portal. XNS agents are hosted by service providers called XNS agencies just like email accounts are hosted by ISPs or bank accounts are hosted by banks. There are two types of XNS agencies: *public agencies*, which register XNS names for other people or businesses, and *private agencies*, which register names only for their own use.

Unlike DNS, where only a special type of service provider called a *registrar* is empowered to register new domain names, all XNS public agencies have the same ability to register XNS personal or business names for their customers on a first-come first-served basis. So, to register an agent, you just choose an XNS agency and register.

As part of the registration process, you choose the XNS name that will serve as your universal address. *The same agent may be registered under multiple XNS names* just as the same phone number may be listed under multiple names in the phone book. (Note that XNS personal agents are automatically registered under a current email address for authentication purposes—the XNS agency sends email to this address with a confirmation code to ensure that the registrant is in fact the owner of this email address.)

9. Where is my data stored, and how secure is it?

In XNS 1.0, it is stored at your XNS public agency the same way your email is stored at

your ISP or your money is stored at your bank. In future versions of XNS, *special agents* will allow you to store your data on local client devices (like your PC, handheld PDA, or cell phone) if you choose. The drawback to client-side storage is the same drawback as storing your money in a mattress—it is not nearly as convenient for automated transactions and 24x7 access.

Every XNS public agency is required to meet minimum privacy, security, availability, and reliability specifications set by XNSORG. In XNS 1.0, all XNS transactions are protected by industry standard SSL encryption. In future versions, new types of security protections made possible by web agent technology will further enhance XNS security.

10. What does it cost, and who makes money on XNS?

Registration of an XNS personal agent under a current valid email address is free to all Internet users. Registration of each additional XNS name to use as universal address for that agent is U.S. $12/year (note that initial promotions are being offered that waive that fee, in some cases for life). Registration of an XNS business name is U.S. $100/year.

In addition to name registration fees, XNS public agencies are free to charge market rates for hosting XNS agents just as ISPs charge for email accounts and banks charge for bank accounts. As with many other personal Internet services, hosting of an XNS personal agent is likely to be free at most public agencies, which will make money on other value-added services or indirectly through increased traffic volume, "stickiness", and customer retention. XNS business agent hosting fees will depend on the business model of the agency—some cases they will be bundled in with other services such as email or web site hosting; in others they may follow a transaction fee model, and in others still fees may be based on value-added services such as use of special XNS knowledgepacks.

To answer the larger question, the revenue streams in XNS, like the revenue streams in the email system or the banking system, flow from end customers directly to the XNS agencies that provide services to them, and indirectly to the other service providers who support the XNS infrastructure.

Bonus Question: How is it based on XML?

In short, XNS is the marriage of web agent technology and XML. In XNS, every web agent is represented by a single XML document, called the *agent document*. When two XNS agents create a link between them, they each create a "link document" inside their agent documents. This document, an XNS contract, is mirrored by both agents, and governs the terms and conditions of the link. Using an XNS contract, two XNS agents can negotiate not just the initial exchange of any XML data stored by either agent, but the subsequent synchronization of any future updates to the data.

This agent-to-agent negotiation all takes place using the XNS protocol, an XML-based message format "spoken" by all XNS agents. This does not mean XNS is designed to be a "dictionary" for all XML documents. Rather XNS establishes a common *control vocabulary* for exchanging, linking, and synchronizing of XML information between XNS agents. In addition, the XNS vocabulary provides a mechanism for creating new XML vocabularies that are fully XNS-compatible, so they offer all the features of XNS. At the highest level, this principle is embodied as the *XNS general namespace*, a vocabulary of generic schemas managed by XNSORG that can be shared, referenced, and synchronized by all XNS agents and agencies.

Bonus Question: Didn't XNS stand for Xerox Networking Systems?

Yes. Xerox discontinued the protocol and stopped using the acronym several years ago. XNS has also been used as the acronym for several research projects. Frankly that's not unusual for any three-letter-acronym (especially those that start with "x"). But it was the clear choice for XNS, given the fact it is a name service at the heart and it is fundamentally architected around XML.