IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA,

Plaintiff,

vs.

MICROSOFT CORPORATION,

Defendant.

Civil Action
No. 98-1232(TPJ)

STATE OF NEW YORK ex rel, Attorney General DENNIS C. VACCO, et al.,

Plaintiff,

vs.

MICROSOFT CORPORATION,

Defendant.

Civil Action
No. 98-1233(TPJ)

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Videotape deposition of DAVID A. LIMP, taken by Defendant, pursuant to Subpoena, at the offices of Brobeck, Phleger & Harrison, 2200 Geng Road, Palo Alto, California, before Mona M. Wonder, Certified Shorthand Reporter within and for the State of California.

A P P E A R A N C E S

UNITED STATES DEPARTMENT OF JUSTICE
ANTITRUST DIVISION
Attorneys for Plaintiff United States of America
450 Golden Gate Avenue, Room 10-101
San Francisco, California 94102

BY: SANDY ROTH, ESQ.
KARMA M. GIULIANELLI, ESQ.

STATE OF CALIFORNIA OFFICE OF ATTORNEY GENERAL
Attorneys for Plaintiff State of New York and
Other Plaintiff States
50 Fremont Street, Suite 300
San Francisco, California 94105

BY: RICHARD N. LIGHT, ESQ.

SULLIVAN & CROMWELL
Attorneys for Defendant Microsoft Corporation
125 Broad Street
New York, New York 10004

BY: STEPHANIE G. WHEELER, ESQ.

BROBECK, PHLEGER & HARRISON
Attorneys for Network Computer, Inc., and
David A. Limp
Two Embarcadero Place
2200 Geng Road
Palo Alto, California 94303-0913

BY: THOMAS H. CARLSON, ESQ.

ALSO PRESENT:

KEVIN WACK, Paralegal
United States Department of Justice

CHARLES A. SABIA, Videographer
Action Legal Video

What's your definition of an operating system so that we're talking on a common set of terms?

A. Okay. An operating system is responsible for the low-level routines inside of a device to get it from a power-up state, when power is actually given to the device, to the point that it can run a functional piece of software. It may also include device drivers that can handle various input-output mechanisms for it, keyboard driver, sound driver. It might also include a set of graphics libraries to be able to drive one of those critical devices, which is the display mechanism, and it also might come with some kind of applications framework to be able to run applications on top of it.

Those last three things though are optional in the definition of an operating system. At it's very lowest level, all it is there to do is prepare a piece of hardware to run software.

Q. What could you do with an operating system that didn't have any device drivers, didn't have graphics libraries, and didn't have an applications

framework? What could an end-user do with an operating system?

A. Well, in the embedded space, you know, most of the things you do today are running on operating systems like that, so your microwave oven, you can hit the popcorn button, and it knows to put three minutes on the screen and the right heat, so, you know, I think you have to define a range of devices, so you can do very functional things. It's just harder sometimes to write the software on those devices.

But if you have a very dedicated device that is just a gas pump -- all it has to do is, you know, count how many gallons are going through it and set a price -- it's very easy to write that in a small amount of code. The more complicated the device, I think, the more you need more device drivers, and the more you need more display mechanisms and those kinds of things, but it really depends on the device you're running.

And because we span all of those, the range of what I would call an operating system could or does -- could, can, or must do could span a very large range of things.

Q. Would you consider a graphical user interface part of the operating system?

A. Completely optional. In fact, I would say that moves into the application layer.

Q. Do you have graphical user interfaces in your products you make for set-top boxes?

A. The graphical user interface that we have in our set-top box products is all written -- all the graphical user interface is written in HTML and Javascript.

Q. I'm not sure that answered my question.

A. So do we have a graphical user interface,

GUI? All set-top boxes as they display on a TV screen will have some form of graphical user interface. They are completely customizable by our licensees though, so no two look the same.

I'm afraid people would leap to when you hear GUI the definition that -- you know, that if you have one graphical user interface, just like on the Macintosh, it always looks like the next Macintosh, which looks like the next Macintosh.

All of our devices are unique in that when you see one, you wouldn't know the next one is from exactly the same vendor because it's customized by the OEM themselves. They have the ability to change the user experience, change the environment, and that's one of the core capabilities. So, yes, they have a GUI, but they are different from device to device.

Q. I want to try to get us on sort of a common set of terminologies for the rest of the deposition. If we talk about network computers, what does that mean to you? Does it include gas pumps, for instance? I'm trying to get out the microwaves and gas pumps unless that's something that you think a network computer is.

A. No. That is not a network computer. I would define a network computer as the enterprise marketplace

where you are dealing with the deployment of enterprise applications, terminal replacement, running of legacy applications, or doing in some forms Windows emulation. Those are the four tasks in the enterprise environment that I would define around a network computer, which is a subset of information appliances as a whole.

Q. Maybe I want to be talking about network computer clients or information appliances. I'm trying to get to things that I can understand like set-top boxes and workstations and not gas pumps and microwaves.

So what kind of terminology do we need to agree on to be talking about the kinds of products that you make -- the kinds of appliances you make -- NCI makes its products to run on?

A. Well, we run on that whole range. I can give you examples of all those things, including the low end. However, what I would say is: If you want to talk about the workstation market, say workstation market.

If you want to talk about the PC market, say PC market, NC as I just defined it, and then for purposes if you're interested in TV centric devices, I would use just that, set-top. I'll understand if you say set-top boxes that it extrapolates to digital televisions and satellite boxes. It's a pretty big

category, but I'll understand what you mean.

Q. Does NCI sell NC Desktop as a stand-alone

product?

A. We do not sell it specifically as a stand-alone product. It does come with the server because, again, in the network computer marketplace, without the server, you can't -- it doesn't work, right? It is a server-oriented architecture, so you can't just sell the client in isolation.

However, we have taken components of NC Desktop and sold them separately to people that have their own server architecture, so there are points in the short career of the company that we have taken components out of NC Desktop and sold them separately.

Q. Do you know which components have been sold separately?

A. We have sold the mail, newsreader, and browser separately.

Q. What kind of companies would buy the browser separately?

A. IBM would be an example of a company that has bought the browser separately.

Q. Do you know what they were going to do with it?

A. They ship it today on all of their net stations.

Q. What's a net station?

A. A net station is their name for their network computer as we previously defined it.

Q. What is the user interface in NCOS?

A. We have a user interface that's part of NC Desktop that develops a graphical user interface, a framework for giving inputs into the operating system, that sits on top of the operating system.

Q. Is the browser the user interface in NCOS?

A. No. The browser is an application that sits inside of the graphical user interface for the operating system.

Q. Does the GUI, the graphical user interface, for the operating system have a name?

A. NC Desktop. We haven't called it out specifically though. I think in using a Microsoft analogy, you know, there's no real name for the GUI. It's Windows in general, so NC Desktop defines the framework that also includes the graphical user interface.

Q. Was providing Internet connectivity part of NCI's strategy for NCOS?

A. Yeah. Internet connectivity is what we do. It is the core thing that we're in the business to do,

so there is not a product that I mentioned in the list of products that we talked about earlier that does not include Internet functionality. It is what my company is in business to do, so yes. The answer is yes.

Q. Is there a separate charge for the TCP/IP stack?

A. No. We don't call out separately for the TCP/IP stack on our price list specifically, but what we would do and we do very often is: If somebody has their own TCP/IP stack, we will subtract the amount that somebody would pay for our product because they're using their own, so, you know, in the case of -- I'll use IBM as an example. They HAD their own operating system and their own TCP/IP stack but wanted our Internet browser technology and some of the plug-ins we just talked about, so we didn't charge them for the full NC Desktop.

We charged them a subset of that for the browser and the plug-ins and the work to port it to

their platform, and they got their operating system and TCP/IP stack from, you know, anywhere that they chose to get it from, so yes. I guess the answer to your question is that we don't specifically call that out, but we have -- and our business practice is: If somebody wants to do it ala carte, if you will, they have that opportunity.

Did NCI perceive there was consumer demand for operating system features that allow users to connect to and view the Internet?

MS. ROTH: Objection. Vague, lacks foundation.

BY THE WITNESS:

A. We define our demand, our consumer demand by -- for this product line by the enterprise customer, and they don't call out a differentiation in the

features they are requesting in the area that we do products at the operating system level.

They do call out the want or need for Internet technologies, and that's why they come to us, because that's what NCI does, but it's never -- the best of my knowledge, other than drivers and device drivers, it's never called out as an operating system feature.

Q. Does Release 2 of NCOS include a Web browser?

A. No.

MS. ROTH: Objection.

BY THE WITNESS:

A. No, it does not. NCOS is, as you can see from the checks --

Q. On Exhibit 4?

A. On Exhibit 4, you know, there are some checks to the -- like I said before, between 1 and 2 and 2 and 2.1, you know, there's not too many checks that are added from the left column to the right. The OS got pretty stable. We added a few more device drivers, added a little bit more capabilities, but we did not add what I would, you know, again categorize as a browser. The browser is an application that comes with NC Desktop and is a separate part of our product line.

Q. Does NC Desktop include a Web browser?

A. NC Desktop does include a browser, yes.

Q. Which ones?

A. Today there is only one browser that it includes. It includes various versions of it, but it includes the Netscape Navigator browser. We rebrand the NC Navigator or NC Browser, depending on the piece of material that you're reading, and we have done Version 3.0 as well as Version 4.0 of that browser.

Q. What do you mean, "we rebrand the

NC Browser"?

A. So we take the source code. As I mentioned earlier, we are a source code licensee of Netscape. We take that code in, port it to NC Desktop's environment, and then relabel it. Instead of Netscape Navigator or Netscape Communicator, we relabel it, rename it essentially, although it looks very similar, rename it to NC Navigator or sometimes the NC Browser as it's a com onent of the NC Desktop suite

Q. Is the Navigator browser included in the price of NC Desktop?

MS. ROTH: Objection. Vague.

BY THE WITNESS:

A. Again, the NC Desktop is a suite of applications and an operating system that is a bundle and all represent different value pricing for that. When we put them together, we price it as one price, but

we have separated out the components and sold them separately as well. They're not treated as a hard -- sometimes in this term we use the word "hard bundle" where it's like you've got to buy it all, or you can't get anything. That's not how we treat the product.

Q. If you buy NC Desktop, you don't pay extra for the browser?

A. By definition, you're paying for a lot of components in a product. You're categorizing it wrong. It's value pricing, so you're paying for all the pieces that are in there. There's a little bit of a chunk for the browser, a little bit of a chunk for the mail application, a little bit of a chunk for the NCOS, that kind of thing. It all bubbles up to one price.

It's like going to McDonald's and buying a value meal. You get two cheeseburgers. You get the fries. You get the super size, the whole thing, and it may be a little cheaper because you put them all together, and we try to get people to do it because we actually make more money when you buy it all together, but in fact, you can subset out pieces of those things, and if you just want one cheeseburger and not two, you can go to the menu and do that, too.

So I think you mischaracterized it the way

you asked the question. It's value-based pricing.

Q. I'll try one more time. On the price list, is there a price for NC Desktop with browser and NC Desktop without browser?

A. On our price list, we do not call out the browser as a separate item. We call out NC Desktop, and it does include the browser in that bundle. We have sold the browser separately.

Q. What would you call that station?

A. A network computer.

Q. But network computer can also refer to things like set-top box, can it not?

A. We are moving away from that because of the very confusion that you're showing here. We call a set-top box now an information appliance. These are all in that they're -- inside of the umbrella of the information appliances, there are categories. One category is network computers, NCs. Another category would be a set-top box as you've described it.

Q. Okay. That's what I've been trying to get to all day, just so I understand what we're talking about. We've talked separately about the features of NCOS, and we've talked separately about the features of the NC Browser. Are there any Internet technologies in NC Desktop that we haven't already talked about as part of the operating system or the browser?

MS. ROTH: Objection. Vague.

BY THE WITNESS:

A. I would point to Exhibit 7, which is the product, and on that there are -- there is a mail, which is, you know -- I would say by definition we treat it as a separate application, but it is an Internet-related

technology, and on the bottom, there is an NC Java Launcher, and I would -- that's on the second page, and I would say by definition Java would be considered an Internet-related technology, so those are both things that we haven't discussed that are part of this bundle that are Internet-related technologies.

Would you include as Internet-related technologies in NC Desktop the browser ones we've discussed and the operating system ones we've discussed?

MS. ROTH: Objection. Vague.

BY THE WITNESS:

A. Again, we covered this, but the browser, I would, yes, absolutely consider the browser Internet-related technology. It's a component of the bundle that we're talking about here, one that we also sell separately. Operating system pretty much by definition I would not consider Internet-related technology except for the thing that we've talked about, which is the protocol, the actual IP protocol. That could loosely be considered that, but as you've seen from most of our feature documents, we consider that sort of a separate component of the operating system, a

subcomponent, and one that we license separately often or allow our OEMs to source separately as well.

Q. Exhibit 7 refers to Netscape Communicator, and we've been talking about Navigator all day.

A. Mh-hm.

Q. Did NCI recently switch from Navigator to Communicator on NC Desktop?

A. Yes. The version from Version 2.1 to 2.2 of the desktop, one of the major feature changes was to move to Communicator from Navigator.

Q. Can you tell me what it is?

A. This is our standard OEM Technology License Agreement. It's based on a form. In this case, it is an agreement between my company, Network Computer, Inc., and Fuji Electric Corporation to give Fuji the right to manufacture approved NC devices that can run NC Desktop. It also defines comarketing arrangements, support arrangements, and various other contractual terms between the two companies.

Q. Okay. I want to refer you to page 3, third full paragraph. It starts, "Fuji Electric agrees not to cause or permit the reverse engineering, disassembly or decompilation of the NCI programs."

Do you know if that's a standard term?

A. This is absolutely a standard form in every software agreement that we have.

Q. And why is this a standard term?

A. Some of the things that we give them in the ability for them to build device drivers and help the port to their device include access to our tools and often pieces of our source code. When you're working with low-level tools involved with the port, there is the ability to -- intent-driven obviously, but there is the ability to be able to reverse engineer code, and in every software contract that I have ever looked at, we protect ourselves here -- and other companies -- we protect ourselves from somebody reverse engineering and being able to basically coopt the code for themselves.

Q. Do you allow OEMs to modify your source co e or to delete portions of your source code?

A. We treat that as an exception, not the rule, but we have absolutely allowed people to add device drivers, and you will see call-outs in here to a statement of work as well as NRE, which is nonrecurring engineering or nonrecurring expenses, and we treat those as extensions to the program and the ability to add things to it, but they are extensions to our normal Ts

and Cs, terms and conditions, not as the rule.

Q. Do you have to -- does someone who wants to add a device driver or modify the code in any other way have to get written permission from NCI to do that?

A. They would have to get contractual terms to be able to use our tools to do that. That is correct.

Q. Would you -- would NCI ever permit an OEM to license software from NCI and modify the user interface?

A. We have. In the case of IBM, which we mentioned earlier on their net station products, they don't take the whole NC Desktop. They take the browser and now the mail application, but they have chosen to do a very different user interface than we have in the NC Desktop with some of their own branding and that kind of thing, and we authorize them to do that in their contract.

Q. Okay. Let's try this: Would you -- would NCI permit a licensee of NCI software to change what appears on the screen when an end-user boots up the software?

A. Yes. I don't see any reason why we would not. We have branding requirements that we would require them to have a certain amount of sort of ability to credit our software, right, so we would say that you have to at least put up an NC someplace, but if they wanted to add, say, an IBM logo or a Fuji Electric logo or if they were a value-added reseller of our software -- they aren't in this case, so it's maybe not the best example -- we would have no problem with that at all.

Q. If an end-user had licensed the full NC Desktop from NCI, would you allow the end-user to delete components of the NC Desktop?

A. If the end-user is that systems administrator, again, then absolutely. That happens every day. There's really two levels of delete, so let me clarify that. You could either just remove the

ability to run that because when you launch in NC, it downloads certain things, so you could either not just download that to the fundamental client itself, so a given user couldn't run a program or see a feature because it wouldn't ever even download. A network administrator could do that.

Or if they just didn't value a piece at all and just wanted the hard drive space for whatever reason, they could fundamentally just delete a folder on the server, so if they decided, you know, I don't really want these terminal emulation applications, or I really don't want this browser, I would just go to the browser folder, say delete, empty trash, and it's gone, and they would no longer have ability to download that to anybody on the network.

Q. How difficult is it for a system administrator to prevent an employee end-user from having access to a browser?

A. In our software stack, the NC Admin. Server

and the NC Desktop, to remove a browser or any other application component from downloading is simply a function of one click of the mouse. To turn on or off a check box does that download to that user, and then we define the sense of groups and groups of groups, and you can turn it off for one user or group or whole groups, and that's all based on check boxes on the graphical user interface.

Q. Why did NCI decide to provide such system administrators with the ability to prevent end-users from having access to the browser?

A. It's probably best described in an analogy of the environment that people are working in. If you went to the floor of a call center like Avis -- I'll use Avis again as an example -- where people are taking reservations, you may not want -- as a system administrator, you may not want the person that's working eight hours a day on the call to have access to the Web. They can go off and surf to games and surf to the other things when they really want to be running that call center application, which is, answer the call, get the reservation, move to the next call.

And the access to the Web could be a productivity -- it wouldn't add gains to your

productivity, shall we say, whereas the next -- the manager of all those call-center people might very well need Web access because the application that manages the -- you know, how many calls are coming in and how often they're coming in is actually driven from a Web-based application, so by giving the network administrator the ability to turn it on for some users, turn it off for other users, in other words, download it or not download it, it gives them the flexibility to define what the end-user sees, and it goes back to that white paper where, you know, security is controlled by the network administrator, not necessarily the end-user.

Q. You testified earlier about an operating system, I believe, you called FreeBSD; is that correct?

A. Yes.

Q. Is FreeBSD available for licensing from sources other than NCI?

A. Yes. It's sometimes called NetBSD or FreeBSD. I just noticed in some of the documentation we had it called it NetBSD, but yes. You know, it's one of these things like Linex. It's kind of out there, and lots of people license it for lots of different devices. I don't have an exhaustive list in front of me, but certainly you have the ability to do so. It's not exclusive to us at all.

Q. So if someone wanted to license FreeBSD, they wouldn't necessarily have to come to NCI to do that; is that correct?

A. Oh, no, no. In fact, if somebody wanted to go and get their own license and do a port to their device and then came to us just for all the other software components in the network, in the NC Desktop, then we would be happy to sell it to them, yeah. It's

no problem. We port to lots of different OSs, and we wouldn't have any problem with that.

Q. When NCI licensed FreeBSD, did they -- did that license include a license for a browser?

A. No. It was strictly an operating system licensing agreement.

Q. You testified a little while ago that if a system administrator wanted to, they could remove the browser code from their system entirely; is that correct?

A. That is correct.

Q. Would uninstalling that code harm the operating system?

A. Again, I would define the operating system there. If you're talking about the NCOS that is downloaded to the device when an NC comes on, network computer comes on, no, it's an application that sits above that. By deleting that, it just wouldn't be visible on the NC Desktop any longer, but the operating system would be fully functional with all the other applications that downloaded to it.

Q. How important is it to NCI that applications be available that will run on the NC operating system?

A. Well, applications by definition are the core

of the platform's existence. I mean, everything that's important there, the operating system is fairly irrelevant. It's important that there are applications that exist from a browser to, you know, a word processor at some point to Java to a lot of other things.

So applications are absolutely critical to the success of NCI as a company. If there's no applications, there's no useful intent for the software, and we just would go away.

Q. What is your perception of how the availability of applications has affected NCI's ability to license the NCOS?

MS. WHEELER: Objection. Assumes facts not in evidence.

BY THE WITNESS:

A. I mean, when you create a market early on as we're doing, you have to go out there and evangelize application development just as you would evangelize, you know, the devices and everything else, right, this category that we're kind of spawning out of nothing, so we're constantly out there evangelizing applications, and they're incredibly important that they come in port to the platform.

We use the languages of the Web -- there's a

little bit of a cliche there, I guess -- to promote the development of new applications on the platform, that being mostly, but not all-inclusive, HTML, Javascript, and Java to build applications on top of our platform.

Q. So is it important to NCI that there be a significant number of applications written in the Java language?

A. Yeah, absolutely. We -- you know, Java is extremely critical to our strategy in that the ability for applications to run cross-platform, one of the easiest ways to do that is have them written in Java. You write once. They run anywhere, and we get to leverage -- Java is one area where, as well with HTML and Javascript, we get to leverage the fact that development is going on for the install base of PCs as well, so we have a limited number of devices out there.

PCs have -- I don't know -- a hundred million or so out there that are Web capable, so people can write to those, and by definition then, if they're written in Java, they can then run on our platform, so it's a huge advantage for us if things are written in Java.

Q. Has NCI made any efforts to encourage the development of applications written natively for the

NCOS?

A. The only time that we ask for applications to be written native is if it's a quicker time to market. Java is early in its development cycle, so if it's a quicker time to market, or the performance is such that you just couldn't get it through Java.

But we absolutely try to limit the number of applications that are written native because portability goes away, and we would have to then re-port the application every time we move to a different type of device or a different chip architecture. We have some examples of native applications, but we would prefer that not happen and evangelize as such.

Q. What did you mean when you said that portability goes away?

A. The personal computer industry is unique in the fact that, you know, 95 percent or 97 percent of the devices all run Intel-based architectures, and it just so happened with the other percent probably being Macintosh, so writing once, one version of native code, and they're also all running -- mostly running Windows, Windows operating system, so writing one application to the X86 instruction set and one application to the Win32 APIs means you can run off with the majority of the

install base.

The concept behind network computers is: They might be varied things in the world, and we mentioned them a little earlier, but you might have a set-top box here, which is an information appliance device. You might have a true network computer in an enterprise environment over here. You might have a gas pump thing down here. Because of the cost metrics of those various devices, they may have very different chips in them and may be running very different operating systems as we've already talked about.

NCI today supports five different chip architectures and seven different operating systems. If you write an application native to any one of those OSs or native to any one of those chip architectures, they by definition do not run unchanged on all the others. If they are written in HTML, Javascript, or Java, they can run cross-platform with no modification, and then you can aggregate the volume of all those devices.

How would it affect NCI if Java and HTML were to become proprietary standards, and NCI were not the company to control those standards?

MS. WHEELER: Objection to the form of the question.

BY THE WITNESS:

A. So NCI doesn't control the standard at all? So that's the first part of that question that doesn't really ring perfect. The second part of the question is that you used a term that's in the industry, which is an oxymoron by definition, which is proprietary standard, so I probably should define that.

There's oftentimes where standards are -- start as standards, but because they become ubiquitous by one vendor, that they're taken over, and it's happened many times. S&A architecture from IBM, their networking architecture, is an example of where a proprietary standard was created. Everybody uses it, but one vendor controls it.

However, if HTML and Javascript or Java for that matter became under the auspice of one vendor, whoever it would be, it would hamper our ability to innovate, and we innovate in the form of the Web in many ways because we take a browser from Netscape. They're doing a lot of the innovation for us. Then we repackage it and rewrap it and that kind of thing, and then we add our own innovation around it, but if there wasn't

multiple people out there driving the standard and that kind of thing, then we would be hampered completely. You know, we wouldn't be able to innovate anymore. It would be impossible.

Q. Why would you not be able to innovate?

A. Mostly because -- again, I would use the Netscape example. I mean, it's probably applicable to what we're doing here today, so if you take the example where Netscape no longer developed a browser, it became economically infeasible, so their market share is dropping. They've already decided to kind of give it away out there on the Web. You know, you could make the eventual conclusion that they would get out of the browser business. It wasn't a viable business.

If that happened, there is really only one other company in the industry that is really moving browser technology along. There's lots of small players, me being one of them, but really there's only one other, and that's Microsoft. They happen to be my biggest competitor, and if my largest competitor is out there, and they're the only one who is innovating the languages of the Web, I would either have to license it from them or jump into an economically -- already proven because Netscape got out of an economically infeasible

market of trying to create my own browser company from the ground up, which would be very difficult for NCI, so it would -- if that happens, it would be devastating to our -- it would be a very -- it would be a blow.