Podcast Transcript

EPISODE #341

Behind the Iron Firewall: North Korea’s Secret Tech

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EPISODE SYNOPSIS

In this deep dive, Herman and Corn explore the fascinating and chilling world of North Korea’s isolated digital ecosystem, moving beyond the myths to look at the actual software and hardware used within the DPRK. They break down the mechanics of Kwangmyong, a national intranet that functions like a massive, walled-off corporate network, and examine Red Star OS, a custom Linux distribution that evolved from a Windows clone to a sleek Mac OS lookalike on the orders of the regime. The discussion highlights the terrifyingly efficient surveillance features baked into the system’s kernel—such as the "oppression" daemon and automatic file watermarking—which allow the state to trace the path of every digital file across the country. By analyzing domestic smartphones, the "Manbang" streaming service, and tablets that physically lack Wi-Fi chips, the brothers reveal how North Korea has built a modern, high-tech society that prioritizes state security and absolute information control over global connectivity.

DANIEL'S PROMPT

Daniel

I recently came across Red Star OS, which is a Linux derivative connected to the North Korean intranet. This relates to our previous discussion about Iran’s national internet. I’d love to learn more about the internet or intranet that exists in North Korea and how Red Star OS is rolled out and marketed to citizens.

TRANSCRIPT

Corn

Hey everyone, welcome back to My Weird Prompts. I am Corn, and I am joined as always by my brother, the man who probably has a partitioned drive just for experimental operating systems and a separate one just for drivers that do not exist anymore.

Herman

Herman Poppleberry, at your service. And you are not wrong, Corn. I actually spent a good portion of last night trying to get a legacy version of BeOS running on a modern machine just for the nostalgia. It is a nightmare of interrupt requests and missing video drivers, but there is something beautiful about a nineteen ninety-one operating system trying to make sense of a twenty-twenty-six processor. But today we are diving into something far more restrictive and, frankly, a bit more ominous than my hobbyist tinkering.

Corn

Yeah, our housemate Daniel sent us a fascinating prompt today. He mentioned that his wife, Hannah, has been going down a North Korea rabbit hole, and they are curious about Red Star OS and the broader North Korean intranet. It is a perfect follow up to our discussion in episode three hundred thirty-three about Iran's national internet, which we recorded a while back.

Herman

It really is. And it is funny Daniel mentioned Hannah's interest because North Korea is one of those topics that feels like a time capsule and a high tech dystopia all at once. When we talk about the internet there, we are really talking about two different worlds that barely touch. One is the global web, which is reserved for a tiny elite, and the other is the national intranet, which is what the average citizen interacts with if they are lucky enough to have a device.

Corn

Right, and I think that is the first thing we need to clear up for people. Most people hear North Korea and think they just do not have computers or any kind of digital life. But they do. They just do not have the internet as we know it. They have Kwangmyong.

Herman

Exactly. Kwangmyong, which translates to Bright Star. It is their national intranet. If the global internet is a wild, untamed ocean, Kwangmyong is a very small, very manicured, and very walled off swimming pool. It launched back in nineteen ninety-six, which is actually quite early when you think about it. That was the same year the first version of the Naenara web portal was created.

Corn

Nineteen ninety-six. That is the same year the New York Times launched its website. So they were thinking about digital sovereignty almost from the jump. But how does a citizen actually access it? Is it like a dial up situation, or have they modernized the infrastructure significantly since then?

Herman

It has modernized quite a bit, though it is still a far cry from what we see in Seoul or Tokyo. They use fiber optic primary links for the backbone between major cities and institutions. For the average person in Pyongyang or other major hubs, you are looking at DSL or even some local wireless access. But the key is that it is completely physically separated from the global internet. There are no gateways, no bridges. If you are on Kwangmyong, you are effectively in a digital bubble that only exists within the borders of the Democratic People's Republic of Korea. As of late twenty-twenty-five, estimates suggest there are between one thousand and five thousand websites on this network. It is tiny.

Corn

Only five thousand websites? That is like a single corner of Reddit. So what is actually on there? If I am a student at Kim Il Sung University, what am I clicking on?

Herman

It is mostly functional stuff. You have got a domestic search engine, which is reportedly quite basic and often indexed by hand. There are news sites like the Korean Central News Agency, obviously. There are educational resources, scientific papers that have been vetted and uploaded by the government, and even a bit of commerce. They have sites where you can buy domestic goods or look up recipes. There is even a social networking component, though it is nothing like Facebook. It is more like a series of bulletin boards and chat rooms where everything is monitored in real time. And interestingly, they have started rolling out more modern services like food delivery apps and ride hailing platforms that function entirely within this closed loop.

Corn

It sounds like a giant corporate intranet, like what you might find at a massive multinational company, but for an entire country. But let's talk about how you interact with this network. That is where Red Star OS comes in. That is the software side of the equation.

Herman

Red Star OS is the crown jewel of their domestic software efforts. It is a Linux distribution based on Fedora, and it has been in development since around two thousand two. The Korea Computer Center in Pyongyang is responsible for it. And what is fascinating is the aesthetic evolution of the operating system. It tells a story about the regime's self image.

Corn

Right, because version one point zero and two point zero looked very familiar to anyone who used computers in the early two thousands.

Herman

Oh, absolutely. Version two point zero was a dead ringer for Windows seven. It had the start menu, the taskbar, the whole aesthetic. They wanted something that felt professional and familiar to people who might have seen Windows in a professional setting. But then version three point zero dropped around two thousand thirteen, and it was a total pivot. It looked exactly like Mac O S ten.

Corn

I remember seeing those screenshots. The dock at the bottom, the top menu bar, even the window controls in the top left corner. Why the sudden switch from Microsoft to Apple aesthetics?

Herman

Most analysts think it was a top down directive. Kim Jong Un has been photographed with iMacs on his desk. If the leader likes the Apple look, the national operating system is going to reflect that. It is a status thing. It signals that North Korea is modern, sleek, and high tech. But beneath that Mac-like skin, Red Star OS is doing some very non-Mac-like things. This is where the technical details get really interesting and a bit scary.

Corn

Walk me through the surveillance side. This is what people really want to know. If I am using Red Star OS, how is the state watching me?

Herman

This is where my inner nerd gets both excited and terrified, Corn. Red Star OS is not just an operating system; it is a surveillance tool. One of its most sophisticated features is the automatic watermarking of files. This was a major discovery by researchers at the Chaos Computer Club a few years ago.

Corn

How does that work in practice? If I plug a USB drive with a photo into a Red Star computer, what happens?

Herman

The moment you open that file, the operating system takes the serial number of your hard drive, encrypts it, and embeds it into the file's metadata. If you then give that USB drive to a friend and they open the file on their Red Star machine, the operating system adds their hardware ID to the file as well. It is a digital breadcrumb trail.

Corn

So it creates a history of everyone who has ever viewed or shared that specific file. That is incredibly efficient for tracking the spread of information.

Herman

Exactly. If a piece of forbidden media, like a South Korean drama or a foreign news clip, starts circulating, the government can seize a drive, look at the watermarks, and trace it back through every single person who touched it, all the way to the person who originally brought it into the country or first opened it. And it is all handled at the kernel level. There is a specific daemon in the system files actually named oppression. I am not even joking. It is a background process that monitors the system's integrity.

Corn

They named it oppression? That is a bit on the nose, even for them. But what happens if you try to mess with it? If you are a tech savvy kid in Pyongyang and you try to disable that daemon?

Herman

Red Star OS is designed to be tamper proof. It has a continuous integrity checker. If you try to disable the firewall or the antivirus software, which is called scand, or if you even try to modify the system files to hide your identity, the computer will simply reboot itself in a loop or shut down entirely. It effectively bricks itself if it senses it is being compromised by its own user. It is the ultimate mother knows best software.

Corn

That is intense. But let's look at the hardware side. You can't run Red Star OS without a machine. We mentioned in episode thirty-four how hardware wars are shaping the world. Where is North Korea getting its hardware in twenty-twenty-six?

Herman

It is a mix of rebranding and domestic assembly. They have their own hardware brands like Pyongyang and Arirang for smartphones, and tablets like the Woolim or the Ryonghung. Most of these are based on budget Chinese hardware. For example, the Woolim tablet is actually a modified Hoozo Z one hundred. But the North Koreans strip out the Wi-Fi and Bluetooth chips and replace the standard Android with their own locked down version.

Corn

Wait, they physically remove the Wi-Fi chips?

Herman

In many cases, yes. Or they use a custom driver that only allows connection to the Kwangmyong intranet via a specific government-issued dongle. And the Woolim tablet has a feature that is even more invasive than the desktop watermarking. It takes a screenshot every single time you open an app.

Corn

Every time you open an app? Where do those screenshots go?

Herman

They are stored in a hidden directory that the user cannot access or delete. They are meant for the state security services to review if the device is ever inspected. It is called the Red Flag program. It also records your entire browser history and ensures that you can only open files that have a specific cryptographic signature. They use two types: NATISIGN, which comes from the government, and SELFSIGN, which is generated by the device itself for files you create. If a file does not have one of those two signatures, the tablet simply will not open it.

Corn

So you can't even share a PDF with a friend unless the government signed it first. That is a total lockdown on peer to peer sharing. But what about mobile? We hear about people having smartphones in North Korea now.

Herman

They do! There are over seven million mobile connections in the country as of late twenty-twenty-five. That is about thirty percent of the population. They have moved into the four G era with networks like Kangsong Link, which is the domestic alternative to the foreigner-only Koryolink. They even have their own smartphones like the Samtaesung eight, which looks suspiciously like a Huawei Nova nine. These phones have QR code payment systems, navigation apps, and even localized versions of games like Angry Birds and Clash Royale.

Corn

QR code payments? So they are skipping the credit card era entirely, just like China did. But I assume these phones are just as locked down as the tablets.

Herman

Oh, absolutely. They use the same screenshotting and watermarking tech. And they have a new public Wi-Fi network in Pyongyang called Mirae, which means Future. It was launched a few years ago and it is available in major spots like Kim Il Sung University and the Sci-Tech Complex. But here is the catch: to use it, you need a specific Mirae SIM card and a dedicated app. It provides speeds between two and thirty-three megabits per second, which is enough for basic browsing on Kwangmyong but nothing compared to the gigabit speeds we see elsewhere.

Corn

It is fascinating because it is a completely different philosophy of computing. For us, a computer is a window to the world. For a North Korean citizen, it is a tool for state-sanctioned productivity and a very high-tech monitor on their behavior. But they also have entertainment, right? I heard about a Netflix-style service.

Herman

You are thinking of Manbang. It is their IPTV service. It runs through a set-top box connected to the intranet. As of late twenty-twenty-five, it offers about twenty different channels of live and on-demand content. You can watch documentaries, sports, and even some approved foreign language films in English or Russian. But the government uses it to track viewing habits. They know exactly who watched the latest leadership documentary and, more importantly, who turned it off halfway through.

Corn

That is a level of data analytics that would make a Silicon Valley marketing firm jealous, but with much higher stakes. Let's compare this to what we talked about with Iran in episode three hundred thirty-three. Iran is trying to move toward a National Information Network, but they still have to deal with people using VPNs to get to the global web. Is that happening in North Korea?

Herman

It is much harder in North Korea because of the physical isolation. In Iran, the infrastructure is still connected to the global web, just heavily filtered. In North Korea, the Kwangmyong intranet is a separate physical entity for most people. There are cracks, though. People near the Chinese border use smuggled smartphones to pick up Chinese cell towers. They use SD cards filled with foreign media, which they call nose candy because it is a small, addictive hit of the outside world. But the Red Star watermarking makes that incredibly dangerous. If you are caught with an SD card that has been plugged into a Red Star machine, your hardware ID is on every file on that card.

Corn

It is a constant arms race between the people's curiosity and the state's control. You know, it makes me think about the developers behind this. You mentioned the Korea Computer Center. These programmers must be incredibly talented to build a custom kernel-level surveillance suite.

Herman

They are world-class. North Korean programmers often win international coding competitions. Many of them are trained in China or have worked abroad in the past. It is a reminder that technical skill is a neutral tool. It can be used to build a global open-source community, or it can be used to build a digital prison. They have even developed their own office suite called K-Systems, which is their version of Microsoft Office, and a browser called Sogwang, which is based on Firefox but heavily modified for the Kwangmyong network.

Corn

So, what are the practical takeaways for us? We aren't going to be installing Red Star OS anytime soon, though I know you probably have a virtual machine ready to go, Herman.

Herman

I might have poked around in a version three point zero virtual machine once or twice. It is an eerie experience. It feels like using a Mac, but every time you click something, you have this nagging feeling that a daemon named oppression is watching your cursor. But the takeaway for the rest of us is about the trend toward digital sovereignty. We are seeing more countries want their own sovereign clouds and sovereign internets. North Korea is the extreme example of what happens when that trend is taken to its logical conclusion by an authoritarian regime.

Corn

It is also a reminder of how much we take for granted with the open web. The ability to search for anything, to communicate across borders without a kernel-level watermark tracking our every move. It is easy to complain about big tech, but the alternative we see in Red Star OS is far more restrictive. It is a closed loop where the boundaries are hard-coded.

Herman

That is a perfect analogy, Corn. It is like a video game world where you can do anything the developers intended, but you can't jump over the invisible wall. And if you find a glitch, the developers will patch it out in the next update. Red Star OS version four point zero is rumored to be even more locked down, with better encryption and even more aggressive integrity checks.

Corn

Well, this has been a fascinating look into a part of the world that stays mostly hidden. Thanks to Daniel for sending in the prompt, and to Hannah for getting the ball rolling with her North Korea deep dive. It is a sobering reminder of the power of software.

Herman

Yeah, it is a great topic. And hey, if you are listening and you have a weird question or a topic you want us to dig into, get in touch! You can find the contact form at myweirdprompts dot com. We love getting these technical deep dives.

Corn

And if you are enjoying the show, we would really appreciate a quick review on your podcast app or a rating on Spotify. It genuinely helps other people find the show and helps us keep these episodes going. We have been doing this for over three hundred episodes now, and the community feedback is what keeps us curious.

Herman

It really does. Stay curious, everyone. There is always something weird happening under the hood of the technology we use every day.

Corn

All right, that is it for this episode. I am Corn.

Herman

And I am Herman Poppleberry.

Corn

This has been My Weird Prompts. We will see you next time. You know, Herman, I was thinking about the watermarking thing again. Imagine if that technology was used for copyright protection in the West. The movie studios would be all over it.

Herman

Oh, do not give them any ideas! We already have enough digital rights management headaches. Let's not add kernel-level hardware tagging to the mix. But you are right, the technology itself is incredibly powerful. It is just a matter of who holds the keys.

Corn

Exactly. And in North Korea, there is only one person who holds the keys. And he is definitely not sharing them.

Herman

Definitely not. All right, let's go see what Daniel is cooking for dinner. I think I smell something good coming from the kitchen.

Herman

Hopefully it is not sovereign stew. I am in the mood for something international after all this talk of closed networks.

Corn

I think we are safe. Daniel usually sticks to the classics. Catch you later, Herman!

Herman

Later, Corn. And thanks again for listening, everyone. You can find all our past episodes and our R S S feed at myweirdprompts dot com. We are on Spotify too, so make sure to follow us there so you never miss an update.

Corn

We have got some really interesting ones coming up, including a look at some of the weirdest patent filings of the last decade. You won't want to miss that one. It involves a patent for a bird-operated computer interface.

Herman

That one is going to be a wild ride. All right, signing off for real this time.

Corn

Bye everyone!

Herman

One last thing, Corn. Did you ever manage to get that BeOS partition working on your laptop?

Corn

Almost. I just need to find a driver for a twenty-twenty-six graphics card that thinks it is a Voodoo three. It is a work in progress, just like most of my projects.

Herman

Of course it is. Good luck with that. You are going to need it.

Corn

I will. See ya!

Herman

Actually, wait, Corn. Did we mention the intranet search engine again? It is called Naenara, and it is reportedly indexed by a team of people who manually verify every link.

Corn

By hand? Like, people manually entering U R Ls into a database?

Herman

That is the rumor. When your entire internet only has a few thousand sites, you don't really need a Google-scale crawler. You just need a very dedicated librarian with a lot of time on their hands.

Corn

That is the ultimate curated experience. No S E O spam, at least. Just state-approved content.

Herman

A different kind of headache entirely. All right, now I am really hungry. Let's go.

Corn

Lead the way. My Weird Prompts is a production of three guys in a house in Jerusalem. Thanks for being part of the journey with us.

Herman

Peace out.

Corn

Peace. Seriously though, the Mac O S aesthetic in version three point zero is so spot on, it is almost a compliment to Apple's design team.

Herman

Or a very high-stakes parody. I will go with both.

Corn

Fair enough. Talk soon.

Herman

Bye!