Intel-powered Community PC Asset Control System (for Red Hat Enterprise Linux 4.0 Only)

Why Asset Control

India, with its ever-increasing population is ripe for progress, representing enormous potential in terms of economy and resources. Connectivity is the key factor, which will harness its resources. This can be achieved by making the entire nation aware of computers and the benefits of the Internet. This includes the villages of I.ndia, which remain as of now, untouched by the effects of technology to quite an extent. This is where the Intel-powered Community PC comes into play

The Intel-powered Community PC can provide Internet and computing access to a large community and villages in rural and remote areas. These computers are specially designed to withstand the rugged environments and erratic power supply conditions in these parts of India. They are installed at various locations as kiosks for easy accessibility to entire communities. These kiosks are typically owned and operated by village level entrepreneurs. Most kiosk owners may require a bank loan to cover the initial cost of opening their business. Usually banks hesitate to give loans directly to kiosk owners who do not have a credit history or collateral necessary to obtain loan approval. Moreover, banks have difficulty in enforcing timely loan re-payments and recovering these payments in distant rural areas. All of this eventually leads to the loan being written off and the asset being lost. This leads to a vicious cycle of the banks finding such loans unviable and thus shying away from funding kiosks. To overcome this lack of ability to recover the investments by the banks, NGOs have partnered with the banks and act as a bridge between the customer and the bank. To ensure cost recovery from the kiosk owner, an 'Asset Control' feature has been introduced which benefits the owners as well as the banks that fund these kiosks.

What is Asset Control and how does it work?

Asset Control is software installed in the Intel-powered Community PC that revolves around the use of a valid license.

This license needs to be renewed from the certified agent or kiosk service provider by the kiosk owner based on the installments he makes towards the loan taken for the Intel-powered Community PC.

Asset Control keeps a check on the certificate validity of each Intel-powered Community PC. The kiosk owners have to pay their dues to the bank regularly to continue using the Community PC.

A check for the presence of a valid certificate is run every time the PC is switched on. This certificate validates whether the owner of the Intel-powered Community PC has paid his installments on time. If not, he would have to pay his dues and renew the certificate.

There are two types of certificates:

Permanent Certificate: These certificates have no time limit

Normal Certificate: These certificates have a stipulated time limit within which the certificate has to be renewed.

This is how the Asset Control works:

- A bank or a certified agent (NGO) will issue a software license (a 24 digit, encrypted key), based on payment history, to the kiosk owner. A valid license is mandatory for the kiosk owner to operate his Intel-powered Community PC. This license is unique and time bound for each Intel-powered Community PC

- If and when the kiosk owner fails to pay his installments, the license key expires and the computer will cease to work. The expiry of the license key is set by the certified agent that issues the license

- For re-activation of the Intel-powered Community PC, the kiosk owner has to first pay the installment that's due and there after, get the license renewed by the certified agent.

Typical Usage Scenario

Let us take a scenario where the current license issued to a Kiosk owner for his Intel-powered Community PC expires at the end of the month, for example, May 31. From May 20, as soon as the Intel-powered Community PC is switched ON, the user gets a warning that his license will expire soon. If the user goes to make the payment of the installment on May 22nd then by May 24th the payment record is updated in the banking system, assuming two days for the bank updates to happen. From May 24th the user can get the updated license either by

- Downloading the license from the internet

- Or by calling the service center and getting the license key over the phone

After getting the new license, user can resume using the Intel-powered Community PC.

System Architecture

There are three subsystems that are involved in the proper functioning of the Asset Control feature.

### 1. Bank Data Server (At the bank level)

- This server contains information about the loan and kiosk owner such as name, address, payment history, etc

2. Certification Server (At the kiosk service provider level)

- This server receives information from the bank data server about the loan details such as the date of payment

- Based on whether the kiosk owner has made the payments, this server generates a certificate unique to each Intel-powered Community PC

- This server has an interface to the Internet to provide online certification to the user

- An offline interface is also provided whereby the user can be issued the certification manually

3. Intel-powered Community PC (At the end-user/kiosk level)

- This is the other end of the spectrum where the Intel-powered Community PC exists with inbuilt Asset Control feature.
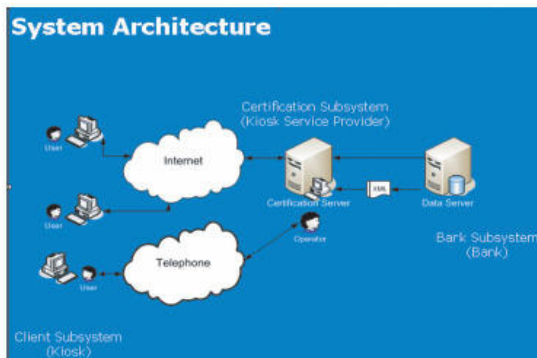
- The System Architecture of Asset Control

How Should Asset Control Be Maintained?

There are four usage states for Intel-powered Community PC; valid period, warning period, grace period and past due period. Asset Control will determine the appropriate period the Intel-powered Community PC based on the system time.

The Valid Period

The valid period is defined as being seven or more days before the expiration date of the certificate

Warning Period

The warning period is defined as being less than seven days before the certificate expires. During the warning period, the PC can load Windows and the user is informed when the certificate will expire

Grace Period

The grace period is defined as being less than seven days after the certificate has expired. During the grace period, the PC can load Windows, but the user is warned to get a new certificate as soon as possible

Past Due Period

The past due period is defined as being more than seven days after the certificate has expired. During the past due period, the PC will not load the operating system until the user gets a new certificate. Given below is the diagrammatic representation of the four usage states of the Community PC.
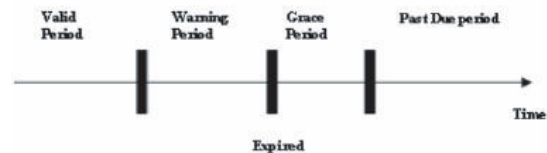
Customer Testimonials

The Asset Control feature has been corroborated by Kiosk Service Providers that Intel is working with to pilot the Intel-powered Community PC . Intel has conducted field tests and demonstrations at the locations of n-Logue Communications Pvt. Ltd. and Drishtee Dot Com Ltd., kiosk service providers and network orchestrators essential to the proliferation of ICT initiatives into Rural India.

n-Logue (www.n-logue.com)

The offline mode of Asset Control was verified at the Chiraag Internet center of n-Logue Communications Pvt. Ltd. This was found to be working fine. The Online mode currently does not support WLL based networks used by n-Logue and could not be tested. Here is what Mr V.N.R.N Ravi, Asst. General Manager of n-Logue had to say on this feature. "The Asset control feature would facilitate the financiers to lend in this space with confidence. This is set to trigger a boom in rural IT business and help in bridging the digital divide in a big way."

Drishtee Dot Com Ltd. (www.drishtee.com)

Drishtee Dot Com Ltd. uses a central MIS (Management Information System) database for maintaining information about their kiosks. The certification server used by Asset Control could be easily integrated with this MIS system, to provide the necessary information about the asset and its payment history. This feature would make it very easy for Drishtee to map the loan payment information from their partner financial institutions to their kiosk systems and thus ensure timely recovery of money for their partners.

For more information about Drishtee and n-Logue, please refer to the Intel-powered Community PC Ecosystem document from Intel.