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It’s an internet thing

Steve Schmidt of Flexera sees an opportunity for IT user companies to use a new range of intelligent devices via the emerging ‘Internet of Things’.

Gartner has claimed that the ‘Internet of Things’ is on the horizon. The ‘Internet of Things’ is a phrase used to describe how the internet will link traditional smart devices with a wide range of additional physical assets, to allow these endpoints to generate and share data. Nearly every product will have an IP address and communication capability – not just networking and telecoms devices, but also industrial equipment such as buildings, medical devices, test & measurement systems, construction equipment and oil & gas machinery, to name a few...all these will link to other devices and services via the web.

This isn’t Blue Sky thinking. In its recent report The Internet of Things is Coming, Gartner recommends that CIOs and IT leaders set aside two days as early as ‘before mid-2012’ to develop a strategy for this scenario.

The trend of the pervasive internet is already gaining hold and today is described in a number of ways in different industries – including machine-to-machine (M2M) communications, intelligent device management, telematics, telehealth and ‘smart’ infrastructure.

Gartner forecasts that there will be more than 30 billion permanently connected devices by 2020, and more than 200 billion intermittently connected devices.

User benefits
So how will these smarter products benefit IT user organisations? There are two key areas:

- Product life extension. This development will extend the life of the manufactured device itself. Much of the functionality of these devices will be managed and controlled via embedded software rather than hard-coded onto the physical components. As a result, product upgrades and enhancements can be delivered via software commands communicated to the device via the internet.
This is good for the user because it enables you to derive more value, over a longer period of time from the product with minimal disruption. (It’s good for the manufacturer too because it enables more up-sell opportunities to put new functionality in the hands of customers at minimal expense and effort.) It’s also good for the environment as less physical machinery needs to be manufactured and disposed.

**Automated support.** The Internet of Things will provide significantly enhanced support systems to users, at significantly reduced costs to device manufacturers. Manufactured goods will have the ability to monitor operations and report back malfunctions and their causes – thus drastically streamlining the troubleshooting process. Potential problems can also be flagged by monitoring for trouble signs and patterns, and then resolved by the system anticipating malfunctions before they occur and suggesting preventative remedies.

Many of these problems will be addressable remotely through software commands, fixes and upgrades, thus eliminating the time involved in supplier personnel coming onsite to fix the problem.

### Supplier benefits

For the device manufacturers, there are a number of potential benefits from this trend. Connected devices controlled by embedded software will significantly cut manufacturing costs; the suppliers will be able to reduce the number of models they need to manufacture by controlling features, functions, capacity and throughput via software and software entitlements – allowing them to build once and ‘package’ functionality in any number of formats. They can postpone configuring the products until the user’s exact requirements are determined. As a result of this manufacturing flexibility, producers, distributors and resellers will require less inventory – streamlining the supply chain.

The Internet of Things will also enable manufacturers to create new revenue streams as well as opportunities to grow their customer base. Using a software licensing model, suppliers can easily offer product enhancements through software updates, and charge for the enhanced functionality based on a software maintenance and update model. There are also opportunities to charge for new levels of software support while simultaneously delivering a better customer experience.

And because embedded software allows for flexible product configurations, manufacturers can quickly and cheaply package and price their devices to address new, emerging or niche markets that would previously have been impractical or cost prohibitive.

The additional data generated by intelligent, connected devices can also be turned into intelligence and used to identify new potential markets and market opportunity. For instance, the rapid uptake of a unique product configuration in a particular geographical market might signal a trend that can be marketed more explicitly and then leveraged into other regions.

With this opportunity for additional software on the intelligent device, there is also the option to sell loosely related products and services, developed by the same manufacturer or by their partners. In essence, connected devices controlled by embedded software can be used as intelligent platforms delivering extra value to customers and revenue to manufacturers.

Each of these benefits is the natural result when manufacturers combine an embedded software model with the connectivity of the internet.

### Personalised offerings

As mentioned above, embedding licensing and entitlement management software is the enabling technology that can help intelligent device manufacturers make their products ready to utilise an all-pervasive internet environment. Embedded licensing and entitlement software offers capabilities that allow manufacturers to personalise offerings without having to manufacture multiple models.

Simple changes to the embedded software in the device enables manufacturers to customise the product based on user needs by managing how it behaves – ie, by activating or de-activating features, setting device capacity and otherwise controlling the behaviour of the product. This greatly simplifies product lifecycle management, and facilitates supply chain management.

The usage data provided by the embedded software can offer insight into how customers are using hardware, what software they use most often and new services that could potentially be created. Product usage information can also enable suppliers to make conscious choices concerning trade-offs between cost and value of service when packaging products and services for customers and markets.

Already, there are sophisticated embedded licensing and entitlement management solutions that enable intelligent device manufacturers to tailor their approach to product development and business to meet the demands of a competitive and connected marketplace. In a world where the number of connected devices already outnumber people, anticipating an all-pervasive internet landscape is reasonable.

Intelligent device manufacturers must grasp the concept of the ‘Internet of Things’ by thinking and acting like software companies, not simply product manufacturers. Key to their success will be their ability to understand and adopt a software-centric approach to manufacturing and selling hardware.

Here are some key points intelligent device manufacturers should consider when making the leap to a software-centric model:

1. Securing business buy-in for the transformation – this is broader than just engineering or product management, and requires co-ordination among the groups.
2. Understanding the traditional software licensing methodology and its proven approaches that can be used in the intelligent device context.
3. Determining the appropriate software licence compliance policies and enforcement mechanisms among a wide spectrum of options available, and anticipating the flexibility needed to make changes later as business conditions change.
4. Understanding the difference between delivering hardware and digital goods – the distribution mechanisms should be co-ordinated, but can be unique.
5. Understanding the software value lifecycle – as opposed to a one-off hardware transaction, it is an ongoing process, and is increasingly subscription-based.
6. Creating business processes to support the value cycle of the software.
7. Implementing a customer self-service portal – it can reduce operational costs and increase customer acceptance of software.
8. Defining and executing a product management and go-to-market strategy.
9. Implementing sales training and compensation policies – selling is not about selling numbers of hardware pieces, but about selling ‘value’.
10. Continuously fine-tuning strategy for product development, delivery and execution to optimise revenue and margins.

By using embedded software for licensing and entitlement management, manufacturers can create connected devices that unlock new revenue streams, protect intellectual property and implement configure-to-order manufacturing – significantly reducing inventory while encouraging greater responsiveness to changing market conditions.

As manufacturers make the transition to embedded software and connected devices, they will also need to think through the layers of management and support associated with this new model, especially when selling to other businesses. For instance, the IT operations team in the purchasing organisation may want to control some or all of the processes. This implies some infrastructure changes, including the need to link the connected system to an IT operations management centre, which can then be used to gather, filter, analyse and respond to the data from the new system.

However, individual device manufacturers implement these strategies, there is no doubt that the Internet of Things and machine-to-machine connectivity enabled through embedded software, licensing and entitlements represent a permanent transformation impacting every vertical industry.

As Gartner suggests, smart companies already understand the size of the opportunity and are planning their strategy for this transformation – and some are already there. For those who have not started down this path, it requires top-down desire, imagination and creativity, as well as inputs from experts and thought leaders from all parts of the business who can help the hardware company start thinking and acting like a software company.