AN OVERVIEW OF BOSS : BHARAT OPERATING SYSTEM SOLUTION

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Abstract:

India always needed our own Indian Operating System which can work in our own Indigenous environment and fulfill needs of our own users.Indian peoples always rely on other nations for using Operating Systems like Windows and Linux distributions like CentOS, Ubuntu, etc. in their computers, smartphones, and other gadgets in which, none of which were developed in India. Which results in security concerns .Therefore, if we want to use an OS developed in India.CDAC come forward with the Bharat Operating System Solution.It is to be considered that the Indian government may replace Microsoft by BOSS in their offices in future to protect from cyber attacks .India have different culture and languages for each state.To help them who don't understand English ,BOSS provided in different Indian languages,

Keywords: Operating system,Open source ,BOSS,LSB.

Purpose of Paper:

The aim of this paper is most of Indian are unaware about India's own Operating system. Through this paper I try to give information about India's own operating system BOSS .So that people will get information which results in increasing customers which also affects Indian economy,security.Indian government trying to implement this operating system in all important sectors such as defense,bank,government offices where security is measure. To implement BOSS ,it is important to know the basics of this operating system.In this paper I focus on the basics of BOSS,its different applications,features,and versions .It is a great initiative for Digital India and Atmanirbhar Bharat abhiyan Vocal for Local.

Introduction:

Bharat Operating System Solutions(BOSS) is India's own free and open source Linux based distribution which is derived from Debian.BOSS Linux was developed by Centre for Development of Advanced Computing(C-DAC).It has feature of supporting 19+regional languages in India.The government of India was ready for adoption andimplememtation of BOSS at national level. .It is a key deliverable of National Resource Centre for Free and Open Source Software (NRC-FOSS).It was steps towards "MAKE IN INDIA" or "DIGITAL INDIA" initiative.

BOSS Linux has been certified by the Linux Foundation for compliance with the Linux Standard Base (LSB) standard.It supports Intel and AMDIA-32/x86-64 architecture till version 6. From version 7, the development shifted to x86-64 architecture only. [4]The recent version of BOSS needs a very less system requirements such as System RAM 2 GB,Hard Drive space 15 GB,Minimum 1GHz Pentium processor.

Why BOSS ?

Microsoft is fulfilling all the needs. As per the revelations by Edward Snowden, India is one of the most watched nations, mostly by China and US. Several hacking attempts carried out by China have been reported and are a serious threat for India.[7]According to news published in The Hindu -India among top targets of spying by NSA. As per the revelations by Edward Snowden,According to top-secret documents provided to The Hindu by NSA whistleblower Edward Snowden, the American agency carried out intelligence gathering activities in India using at least two major programs: the first one is Boundless Informant, a data-mining system which keeps track of how many calls and emails are collected by the security agency; and the second one is PRISM, a program which intercepts and collects actual content from the networks. While Boundless Informant was used for monitoring telephone calls and access to the internet in India.So India needs own OS and the government will move the offices from Windows to BOSS.But they have to face a lot of challenges .In India people speak multiple languages so this is also one of the reason to develop operating systems that understand regional languages.

History of BOSS :

BOSS Linux has nine major releases.[8,4].

Initially Sethu developed in 2007 by NRCFOSS(National Resource centre for free/open source software).It is free and open source operating system. It uses Kernel version 2.6.14 and Processor architecture smp. It supports the desktop environment GNOME2.8.

BOSS 1.0 Tarag :
    At January 2006 ,The next version of BOOS 1.0(Tarag) was launched.
It uses Kernel version 2.6.17and Processor architecture i386. It supports the desktop environment GNOME2.14. The office suit OO.o* and DEB Package is available.

BOSS 2.0 Anant :
    At September 2007 ,The next version of BOOS 2.0(Anant) was launched.
It uses Kernel version 2.6.21 and Processor architecture 486. It supports the desktop environment GNOME2.18. The office suit OO.o* and DEB Package is available.

BOSS 3.0 Tejas :
    The releasing date is September 2008.It is free software. It uses Kernel version 2.6.22 and Processor architecture 486. It supports the desktop environment GNOME2.20.The office suit OO.o* and DEB Package is available. It supports multiple regional languages.

BOSS 4.0 Savir:
        The releasing date is April 2011. It is free software. It is free software. It uses Kernel version 2.6.32 and .It supports GNOME2.30.2 desktop environment with processor architecture 686.The office suit OO.o* and DEB Package is available. It supports multiple regional languages.

BOSS 5.0 (Anokha)
        The releasing date September 2013. It is free software.It uses 3.10 Kernel version and supports GNOME 3.4.2 desktop environment with processor architecture 686.The office suit Libre Office and DEB Package is available. It supports multiple regional languages.This is focused on enhanced security and user friendliness.
This contains 12,800 new packages out of over 37,493 packages.It supports Linux Standard Base (LSB) version 4.1. The new version features XBMC to allow the user to easily browse and view videos, photos, podcasts, and music from a hard drive, optical disc, local network, and the internet.

BOSS 6.0 (Anoop)
        The releasing date August 2015. It is free software.It uses 3.16.0 Kernel version and supports GNOME 3.14.4 desktop environment with processor architecture 686.The office suit Libre Office and DEB Package is availabl.An update to the GRUB version,Firefox and Pidgin and several repository versions are also available .
        This also contains various application and program updates, such as updates to LibreOffice, Xorg, Evolution, GIMP, VLC, GTK, gcc, keyring manager, and Python.Scim is replaced by Ibus with integrated system setting.Indic languages enabled with Region and Languages are directly mapped to the Ibus and the OnScreenKeyboard layout is provided for all layouts.

Variant of BOSS:
1) EduBOSS 4 (drishti): BOSS 7.0
        This is used for Education Purpose. At August2018 ,The next version of BOOS 7.0(Drishti) was launched.
It uses Kernel version 4.9.0.8and Processor architecture amd64. It supports the desktop environment GNOME3.22.
It is useful for school student with features includes educational games, paint & graphic tools, typing tutor, and a host of tools and packages for basic learning, and also for teaching subjects like Maths, Science, Social etc.

2)BOSS Server(unnati) :BOSS 8.0
        At July 2019 ,The next version of BOOS 8.0(Unnati) was launched.
It uses Kernel version 5.2 and Processor architecture Intel and amd64. It supports the desktop environment Cinnamon.This is used for server based applications.It has features such as Web server, proxy server, database server, mail server, network server, SMS and LDAP server. It also has support administrative tool such as webmin, Gadmin, PHP myadmin, PHP LDAP admin, PG admin, etc.

3)BOSS Desktop (urja) : BOSS 9.0
            At February 2021 ,The next version of BOOS 9.0(Urja) was launched.
It uses Kernel version 5.10 and Processor architecture amd64. It supports the desktop environment Cinnamon.
This is used for general purpose.BOSS desktop includes an integrated search facility which can be used to launch applications, switch windows, and open recent documents and settings.The release aims at building up on the efforts for developing a e-Government Stack on FOSS and Solutions, which seeks to build up a FOSS community across industry, government and academia thus propelling the growth of FOSS leading to a sustainable ecosystem in India.

Features of BOSS for Desktop :
   1)   BOSS is an open source/Free Linux based Operating system .
   2)   BOSS desktop includes an integrated search facility which can be used to launch applications, switch windows, and open recent documents and settings,3d Graphic environment ,Graphic installer .
   3)   Libreoffice
            It is Full-featured office productivity suite that provides replacement for Microsoft Office.This suite contains programs for word processing, new spreadsheets functions, slideshows, diagrams and drawings, maintain databases, and compose mathematical formulae,updated scientific and number formats,In built dictionaries are available.
   4)   BOSS gives you all in one by allowing you to explore your system settings from the settings panels.
   5)   K3B

This CD and DVD authoring application provides a graphical user interface to perform CD/DVD burning tasks like creating an Audio CD from a set of audio files as well as more advanced tasks such as burning eMoviX CD/DVDs and also performs disc-to-disc copies.

6) GIMP

This application is just like Paint.It work as simple paint,photo retouching ,image renderer,image format converter.

7) Other features : Internet access software,filesharing / converter and multimedia applications,simplescan,VLC,evolution,webcam etc.

8) BOSS is available in 19 different regional languages.

9) BOSS provides a number of useful security tools for system administration and monitoring. Some of the tools are Integrity Checkers, Auditing Tools, Hardening Tools, Firewall Tools, Intrusion Detection Tools etc.

Advantages of BOSS OS :

1) It is Free/Open source Linux based software.
2) No licensing or permit is required to install and use.
3) It can be used in multiple computers.
4) It is very secure .
5) In the case of the Windows operating system, if we install or uninstall the software, then the OS demands a reboot, but in the case of BOSS Linux os, we don't have to reboot the system.
6) It does not require higher specifications.
7) It is easier to migrate toward the BOSS operating system from the Windows operating system .

Disadvantages of BOSS OS :

1) No community exists for the BOSS operating system so if we need help it is difficult to solve any issue.
2) No blog or forum is available which helps us in case of any issue.
3) The updates are available very slowly.
4) India has a problem of compatibility with hardware devices as Hardware devices are not made in India .
5) Many apps which are popular are not supported by BOSS.
6) The equipment makers generally develop drivers for windows or mac operating systems; they don't make the driver for Linux os.
7) BOSS does not come with an application store.

Can BOSS replaces Windows in India :

By studying surveys done by Quora,the following are some opinions of people in India.[5]

BOSS can replace windows only if

1) The Government of India and State Governments make it compulsory for all the Government computers.
2) Most government work is done by using MS Office tools BOSS is providing the same application as Bharateeyoo which must improve to provide similar functionality in a user friendly manner.
3) If updates are provided in time.
4) If BOSS provides support for applications/softwares which are daily needed by government offices.

BOSS in India :

BOSS is operational in various states across the country.Various e-Governance projects developed, hosted and maintained by NIC at the National Data centres and NIC State Data Centres as on July, 2013 out of which 32% of project based on BOSS and other Linux based OS.DeitY has taken FOSS initiatives, like NRCFOSS, BOSS-GNU/Linux, Meghdoot-Cloud through CDAC to adopt and promote OSS.[2]

Many State Governments and National institutions have adopted BOSS Linux.Some of them are Punjab, Haryana, Tamil Nadu, Chhattisgarh, Tripura, Kerala, and Pondicherry. Indian Navy, Indian Army. Promotional and awareness workshops are conducted across the country. Over 250+ colleges across the country have labs with BOSS Linux installed.

The best example of implementing BOSS in India is The Government of Tamil Nadu uses BOSS for official use (DIT, 2011; "The Hindu" March 18, 2014) instead of the conventional operating system MS-Windows. It has some special features:It includes well known FOSS programs; all the tools that are available as a part of software are in Indian languages with software supported in both Tamil and Hindi languages. These features are very important because if we look at facts and figures we need that among 22 constitutionally recognized Indian languages only 10.35% of the total population of the country is familiar with English (Wikipedia, 2015).Tamil Nadu is just one of the numerous examples where BOSS is successfully running in the country.[2]

Other states using BOSS are In Haryana state 58000 nodes are already having BOSS as OS. In Punjab 1400 schools of the state have already implemented BOSS. In Chandigarh also (a Union Territory,also capital of Punjab and Haryana) about 85 schools are using BOSS.

Licence is free.Effortsare being taken to bring vendors on board to create an ecosystem for BOSS Linux. C-DAC has tied up with various vendors to provide technology support on preloaded BOSS Linux on desktop/laptops with minimum price. License for BOSS is free and the service and support are charged.DeitY established FOSS Cell in year 2004 for promotion of FOSS in the country and has taken number of key initiatives creating an ecosystem; the major one is setting up of National Resource Centre for Free & Open Source S/W (NRCFOSS) through CDAC, Chennai.

BOSS Support Centre Network:

BOSS Linux support Centres projects have been set up at various C-DAC Centres. Franchisees have also been used as part of the support centre network. In addition, a National Help Desk facility setup at C-DAC Chennai also provides the additional layer of support.[2]

Research Methodology

The research method uses a secondary source.The research methodology used in the present study is explanatory .This study examines the BOSS's adoption in government and private sector in India. The scope is limited to this country and its government

bodies and various companies/concerns/enterprises. The data collection is done mainly from existing surveys, BOSS studies and internet articles in a mixed fashion.

Conclusion :

1) BOSS operating system is an open-source Linux distribution that is derived from Debian, to enhance free/open-source software usage across the nation.
2) BOSS operating system supports 19+ local languages.
3) BOSS operating system is used in the educational domain with the help of EduBOSS OS, a variant of BOSS OS with features relevant to the primary and secondary school environment.
4) The government can take Capamgine ,Workshops,Webinar,Seminar on BOSS in all Colleges so that youth can get information and it helps to increase the number of user's of BOSS.
5) One of the main disadvantages of the BOSS operating system is that it does not have a dedicated community that can help beginners to understand more about the OS and updates are delivered slowly.
6) Indians or even the Indian government is also not accepting it 100 % as it does not support all software required for government work.Hope in future it will add new functionalities required by the Indian government.

Future Scope :

The Indian government trying to convert all fields where Microsoft is used must change to BOSS.It will be very helpful for Security purposes .Also help in Vocal for Local .India become largest country in terms of technology and security.

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