National Cloud Services of NIC-A successful journey towards Digital India

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CLOUD manifests to be an effective way of provisioning ICT infrastructure set-ups in government because of its cost effectiveness, agility and sustainability, which further ensures rapid deployment & delivery of e-Governance projects and services. With the introduction of National Cloud during the beginning of 2014, India government has set its position to a new high with the high availability of its ICT infrastructure for e-Governance. The National Cloud has further been taken up as a launching pad for fulfilling the aspirations of DIGITAL INDIA. MyGov, Make in India, Digital Locker and eHospital are some among the many ambitious initiatives and projects hosted at the National Cloud. The National Cloud is the first and only one of its kind available under the MeghRaj initiative of Indian Government. Information and services of the National cloud are provided through its portal https://cloud.gov.in which has been recently enhanced for its look and feel as well as usability.

With the launch of National Cloud, the departments can avail cloud infrastructure with much ease. They now have the flexibility of scaling up facilities based on department's requirement of resources time to time. This saves considerable amount of cost, time and enables resource opti-

> "The National Cloud of NIC launched in 2014 has been instrumental in delivering IT as a service to government departments for implementing e-governance initiatives in a timely manner. The Departments can now focus on the actual services and programmes they want to deliver instead of investing energies on IT procurement and management of infrastructure.
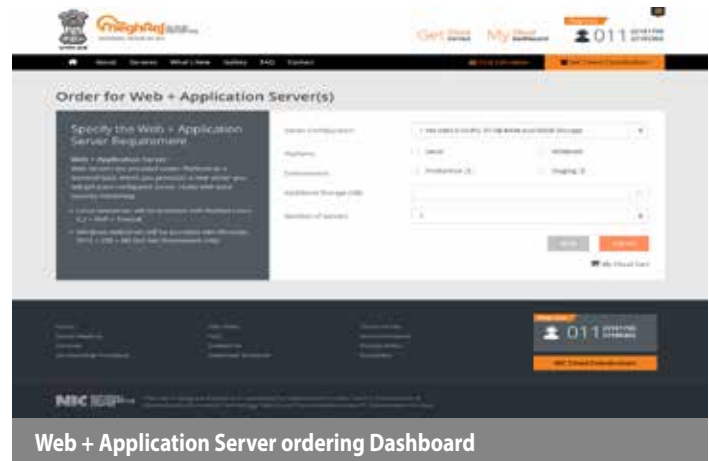>
> National Cloud Services of NIC have been a major support to the Digital India Initiative of the Government which envisages IT as a means to empower citizens. A number of initiatives under this programme including MyGov, KhoyaPaya Portal, Biometric Attendance System, Digital India Portal, Make in India Portal are hosted on the Cloud.
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> Since its launch last year, the Cloud team has made efforts to streamline the delivery of services by integrating various functions of security and networking to ensure a smooth user experience. Efforts are constantly in process to improve user interface. Users can also share their feedback and it is used for improvement of services. A 24X7 help desk is available to support users for any issues. A dedicated cloud team is available for management and administration of the entire infrastructure and services.
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> A Cloud First Strategy aims at ensuring responsiveness, agility and sustainability for government services along with better utilization of resources. Departments now look to the Cloud instead of expending efforts on provisioning infrastructure. "

SHALINI MATHRANI
Sr. Technical Director, NIC

Redesigned MeghRaj National Cloud Portal homepage

Web + Application Server ordering Dashboard

misation. Minimising the efforts for ICT procurement procedures, the departments can now focus more on the aspects of development, implementation and rollout of e-governance applications.

The National Cloud provides all the popular industry standard formats of services such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS) and Storage as a Service (STaaS).

In order to make it easy and simple for the departments, the Cloud services are now encapsulated in simple packages. For their needs, the departments now have multiple options to choose, ranging from preconfigured web, applications and database Servers with Commercial/Open Source System Software to Ready-to-Configure Servers and Storages. Application systems those are generic in nature and commonly used by multiple government organisations are also offered under the SaaS model of National Cloud.

Since the launch of National Cloud Services, various e-governance projects of national as well as state level have been made operational on National Cloud. This includes MyGov (with over 1.2 million Users engaging with Government), **Make-in-India, Prime Minister's Office Portal, Biometrics Aadhaar Attendance System for Govt. Employees (BAS), Digitize**

India, Digital India Portal, Digital Locker, JOSAA (online counseling for Admissions in Engineering IITs, ISM, NITs, IIITs) and **eHospital**. Currently, around **5000 Virtual Machines** have already been allocated to about **250 different projects** of Central Govt. Ministries/Departments, State Governments, District administrations and other organizations.

CHALLENGES FACED AND ACTIONS TAKEN TO OVERCOME THEM

Soon after the inception of National Cloud Services, the cloud management team faced number of issues. Most of the users, including NIC officers across the Country were finding it difficult to use the Cloud services, as they were new to such kind of services. In order to address these challenges on immediate priority, following steps were taken:

- Set up 24x7 Help Desk
- Set up Cloud Orientation Cell

- Organized different Levels of technology awareness & hands-on programmes
- Arranged VC based knowledge transfer sessions

Subsequently, it was made mandatory that NIC officers (Cloud Technical Administrator/ Coordinator) attached with each project to guide its users for quick accomplishment of various procedures such as creation and management of Virtual Servers, coordination for Security Audit Clearance, DNS entry etc. The On-Boarding process was earlier taking a week time for any government organization to acquire the Cloud & initiate the work. This process was subsequently shortened to 2 days by integration of VPN and supporting Network/ Security Services along with automation of various internal manual process of the same workflow.

HOW TO AVAIL CLOUD SERVICES

Step 1 - Visit the National Cloud por-

Many of the Important initiatives and Projects now run on cloud

tal 'https://cloud.gov.in'. Apply to Register for Cloud services. Once the application is submitted, applicant will receive an acknowledgement email.

Step 2 - After satisfying eligibility conditions, the applicant will be registered and subsequently receive a Welcome Mail for SignUp.

Step 3 - On successful Sign Up, the user will receive a 'Terms & Conditions' (T&C) document via email.

Step 4 - The T&C document duly signed and stamped need to be submitted to NIC Cloud Team through concerned NIC HODs/ SIOs.

Step 5 – After acceptance of the document, Sign Up process is complete. The user can then request from a variety of services offered by the National cloud. These include web-server, application and database server, ready-to-configure server along with Compute & Storage requirements.

The user would be given 'MyCloud' Dashboard over a secure channel. With this Dashboard, user can make necessary configuration, operations & management of various services. Maintenance can also be carried out through 'MyCloud' Dashboard.

SALIENT FEATURES

- Servers provided under PaaS are preinstalled with software and hardened as per the government security regulations. These are simple, ready to use machines, which are made to go live by installing application software.

- Provides a complete workflow system to assist the user for activation of any eGov application. NIC officers (Cloud Technical Administrator/ Coordinator) attached to project guides the user for accom-

plishment of various tasks such as creation and management of virtual servers, coordination for Security Audit Clearance, DNS entry etc.

- National Cloud provides a framework to manage multiple sub-projects under the main project with allocation of certain resource quota.

- National Cloud is designed for multi-located Cloud services. Set up has been completed at the Data Centres in Delhi whereas in Hyderabad Centre, the set up is with limited capacity. Hyderabad and Pune Centres are expected to be ready soon to provide Cloud services at a national level.

TECHNOLOGY & ROLLOUT

National Cloud (NC) has been built with state of the art technology, which is designed with security features, generic architecture and simple user interface through a self-service portal. Consisting of in-house developed software, featuring latest technology integrations, the National Cloud has the following technology tiers:

a. **Self Service Portal/ Cloud Portal:** Provides general information on various Cloud services such as the Cloud set up, Help Desk contacts, details of Cloud Coordinators, On-Boarding process etc. This portal facilitates online registration process for availing the Cloud Services and is built using Open Source Technology.

b. **MyCloud Dashboard:** Enables the registered users to access the cloud resources over a secure channel for operations, maintenance & management.

c. **Orchestration Layer:** Workflow driven automation of different processes is associated with various cloud services. This Layer interfaces with underlying hardware through APIs

which provides virtualization solutions.

d. **Virtualization Stacks:** Virtualization engines of various technology providers have been integrated through Orchestration layer to extend seamless service to user departments.

Currently, Cloud has been configured at NIC National Data Centre of Shastri Park in Delhi. Two other nodes at Hyderabad and Pune are getting ready for launch to provide seamless services at a National level.

SUMMARY

National Cloud Services encourages and expects more and more entities of government to take advantage of the cloud services for their various e-Gov projects and Applications by hosting them at National Cloud environment. The recent success stories of the major national level projects such as **MyGov, Make-in-India, Digital Locker** etc. would influence the departments to use Cloud Services tremendously in near future.

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