RTH New Delhi

भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT

General Data Flow

METEOFACTORY

CIPS

CLISYS

UPPER AIR SYSTEM

TRANSMET National

TRANSMET International

TV SYSTEM

BACKUP

SYNERGIE
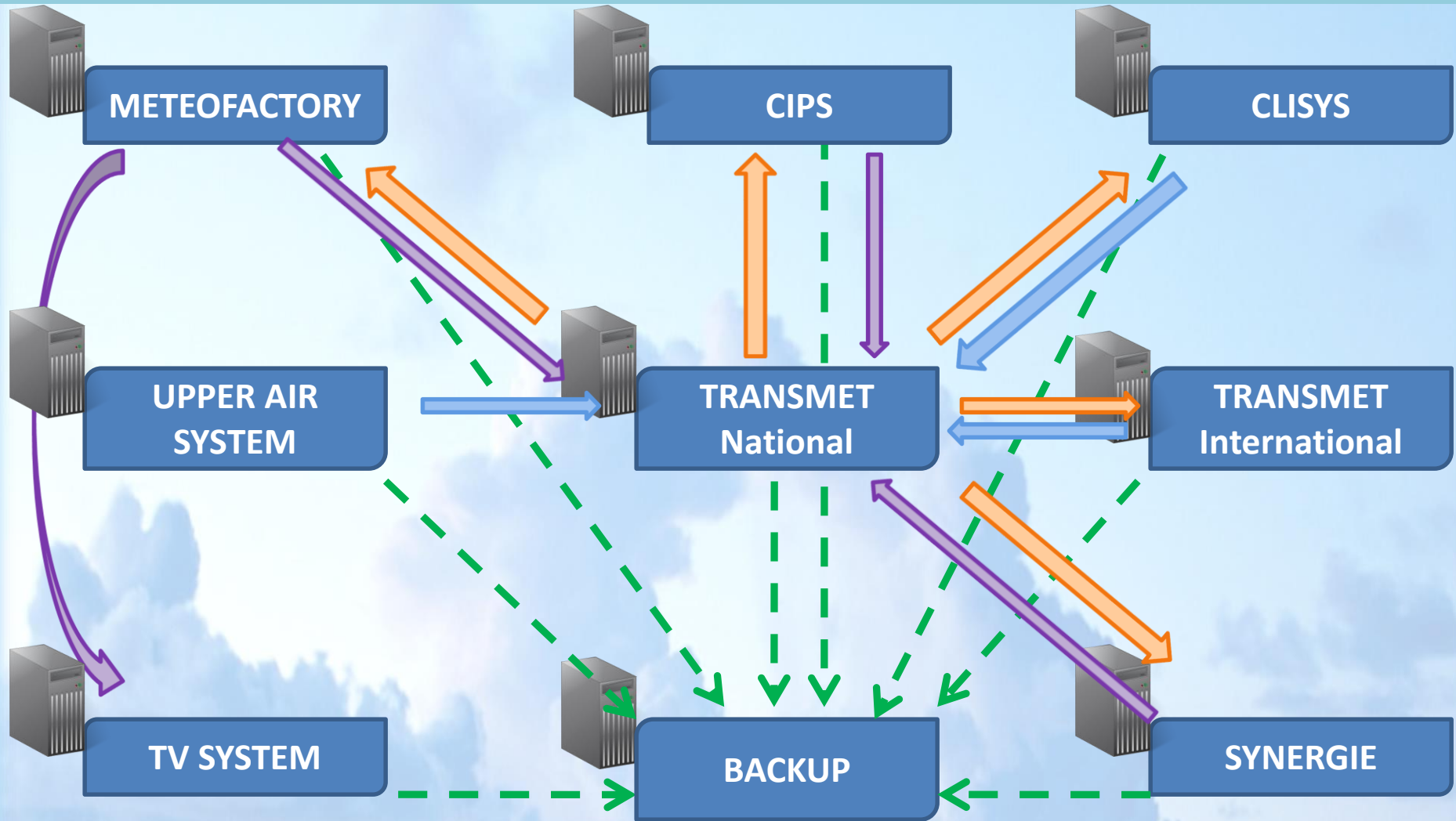
Input Data Flow

Flow of Products

Output Data Flow

Data Flow for Backup

Systems in operation

❖ During modernization programme of India Meteorological Department, following systems have been installed and are in continuous operation.

1. **Transmet :** Automatic Message Switching System to receive, check and route the meteorological data and products according to WMO standards/ requirements.

2. **Central Information Processing System (CIPS**): High end database management system having task centre to develop, test and operationalise meteorological tasks for real time generation of meteorological products.

3. **Public Weather System (PWS):** To deliver High quality weather products and alerts to end users like print media and Television.

4. **Clisys:** Climatological data storage system with scalable management tool for effective utilization of these data.

5. **Synergie:** Decision support system for forecasters to gather, visualize, interact and value add meteorological forecasts and products.

6. **Upper Air System – GPS:** Ten GPS stations installed have significant impact in the upper air data quality. These data are now accepted by ECMWF in their models.

Transmet

- It is the heart of meteorological telecommunication
- **The main functions :**
  - To receive, check and forward automatically, the meteorological data and products according to the WMO standards.
  - TRANSMET interconnects our Meteorological sub-systems; share in real time data and product internally and from/to the meteorological world.
  - **Broadcast of GMDSS, SMS interface, Dial-up interface, SADIS data reception, Message submission through web browser**
  - **Supports data exchange in BUFR format**
  - **can convert automatically the received SYNOP and upper air messages from ASCII to BUFR format**
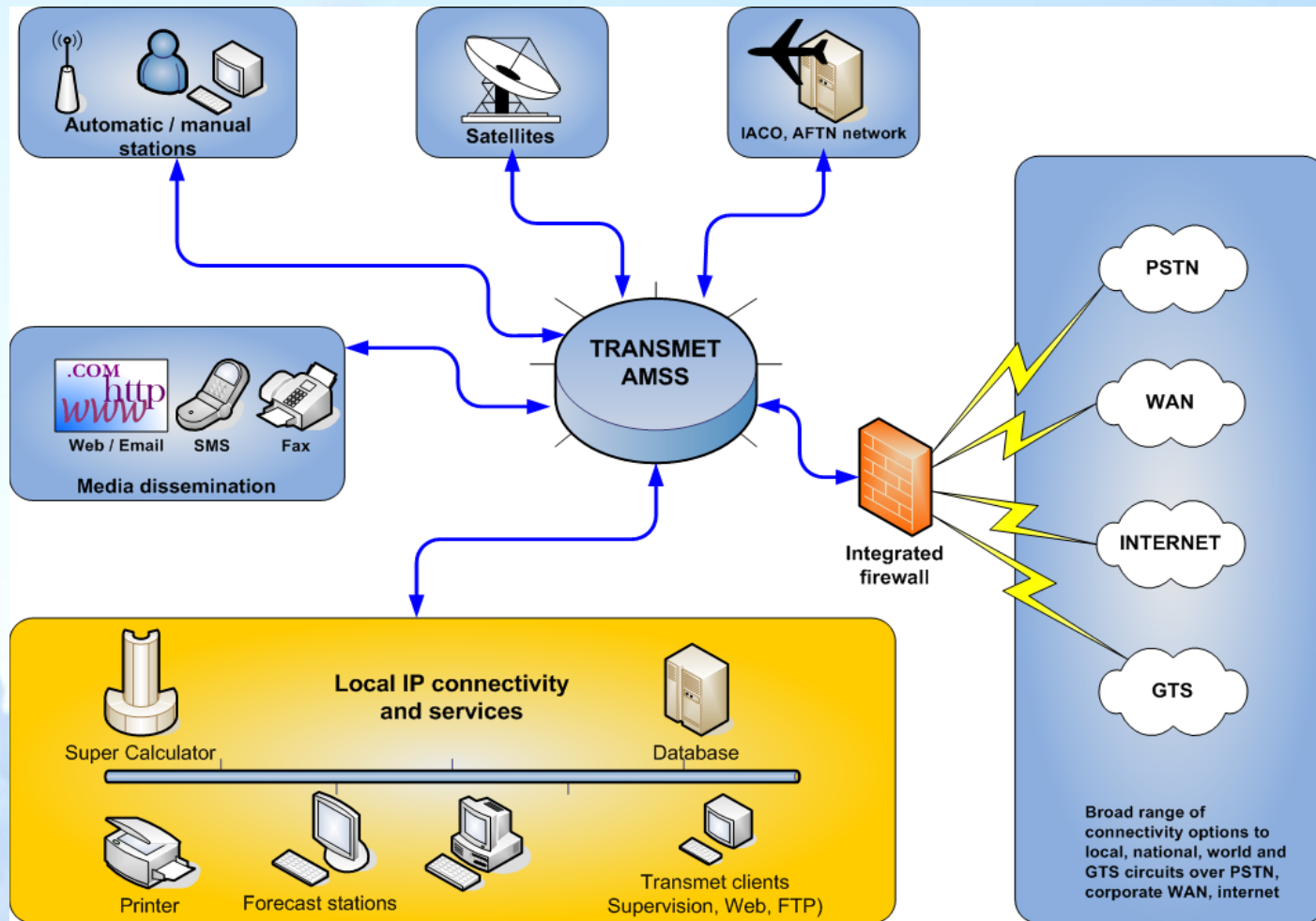 - The system is in operation from November 2009.

Fig. System overview

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Features

❖ **Web tool for easy deployment and setup:** The system includes a web based configuration tool for simplified circuit configuration, routing table modification, circuit supervision, database message search and access, redactions of bulletin (SYNOP, TEMP, TAF, METAR …) and system setup etc.

❖ **Reliability and manageability:** Transmet supports centralized administration and management via Secure Shell (SSH), web interface and local management through the supervision clients. Provision of many debug features allow system administrator to remotely diagnose network problems, operators to diagnose meteorological message syntax, time, format problems and automatic switchover of cluster in case of failover.

❖ **Fully compliant with all network protocols:** The message switch is fully compliant with all the applicable protocols, procedures, regulations and standards including WMO 386. The system design has taken into consideration the need to accommodate future WMO standards. System can interface to any standard communications device. The system is able to handle all kinds of data required by a National Meteorological Service in WMO format and ICAO standards, switch BUFR and CREX data.

❖ **Operators, Administrators and Developers WMO tools:** The system provides a set of tools enabling powerful messages database, WMO monitoring, automatic message compilation, messages editing and correction tools, Transmet Software Development Kit, decode encode functionalities and system administration.

❖ **Single virtual IP address:** One virtual IP address for both LIVE and Standby systems give uninterrupted communication with other centres without any human intervention in case of switchover of the system.

Features contd.

- ❖ **Broadcast of GMDSS:** **Broadcast of GMDSS bulletins has been integrated with the system. This facility enables broadcast of sea area bulletins over safety net automatically at predefined time for Met Area VIII (N).**

- ❖ **BUFR:** **The system supports data exchange in BUFR format. It can convert automatically the received SYNOP and upper air messages from ASCII to BUFR format and switch to GTS.**

- ❖ **Message submission through web browser URL:http://125.21.185.16: Remote/ part time observatories can submit messages to Transmet directly using web browser.**

- ❖ **SMS interface:** **The system is equipped with dissemination of customized message through SMS to predefined recipients whenever the message with a particular header is received. This facility is quite useful for warning dissemination. Small observational messages can also be submitted to the system through SMS.**

- ❖ **Dial-up interface:** **Any authorized remote machine with modem can have access to Transmet data (ASCII and binary), put data and access to the Transmet web to write message using the format functionality.**

- ❖ **SADIS data reception:** **Latest SADIS 2G receiver has been integrated with the system to receive SADIS data directly, which is fed to the GTS for national and international use. Secure SADIS FTP is also integrated as a backup link to receive SADIS data for use in aviation.**

Features contd.

- ❖ **Automatic Weather Station interface:** TRANSMET can be interfaced with DCS (Data Collection System) and AWS (Automatic Weather Stations) networks using asynchronous, TCP/IP interconnections, dial-up access.

- ❖ **Data exchange through e-mail:** The system is capable of switching the message through E-mail. The message is switched to predefined users through e-mail when a message with particular header is received. The system has the ability to retrieve message from e-mail and submit the same to GTS.

- ❖ **File switching:** This facility enables the system to switch satellite, radar, and model output etc. data files to predefined destinations as soon as those are received through FTP. Media (audio-visual) files can also be switched to RMC, MC etc. through FTP.

- ❖ **Network security:** Transmet is the core component for any communication for all types of data exchanged over GTS as well as within the country. All subsystems (CIPS, synergie, PWS, Clisys etc.) also exchange data/ products through Transmet. Being such a mission-critical system, the entire network of the centre is protected by a cisco hardware firewall.

- ❖ **Time synchronization through GPS time server:** The systems across the network adjust their time as per GPS time server integrated with the system.

Central Information and Processing System (CIPS)

✓ **CIPS is the core of IMD Information system, as it is able to handle, manage, store, and archive all data used operationally within IMD.**

✓ **It incorporates:**

1. **Data centre including data integration with quality control and data browser;**

2. **Development of product for forecasters**

3. **Operational & development tasks scheduling;**

4. **Long term data storage with data policy management;**

5. **Critical systems backup.**

6. **CIPS data backup**

7. **Monitoring of all the systems**

Features

➢ **Manage all types of operational Meteorological data (WMO/ICAO format)**

➢ **Web Interface for configuration, monitoring and Data access**

➢ **All Operational and Archived data at a single platform.**

➢ **Fast access of Operational and Archived data with same response time**

➢ **Project/ task monitoring**

➢ **Development platform for new task**

➢ **Automated systems monitoring**

➢ **Data Storage Policy management**

➢ **Auto Backup of Data and all system servers as per framed backup policy**

➢ **System recovery in case of complete failure of any system server**

Data Center

- Provides the data for real-time and archive storage.

- Provides an access layer in order to retrieve data from both real time and archive

- A user or a task can request for data in an output file using Web services, xml document or specific query scripts

- GUI based access tools (Data Viewer) are provided for easier access to data in Synergie to allow immediate visualization of current and archived situations.

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Task Center

CIPS provides an Integrated Development Environment with necessary software tools, where Operational tasks can be developed, and tested with real time data.

Task developed can be ported to CIPS environment for controlled execution as per predefined schedule.
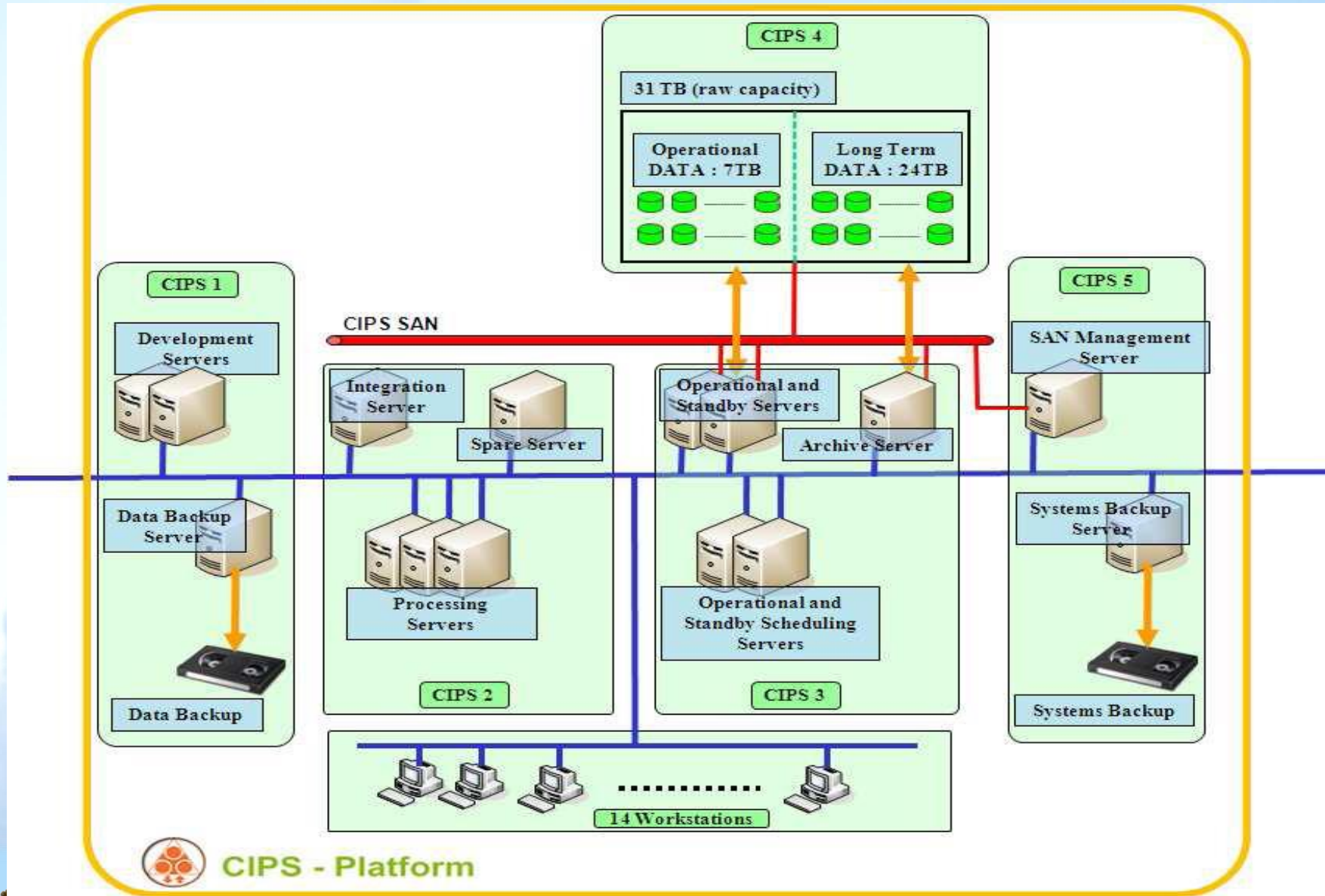
System and data Backup

- **CIPS system has system backup of all the MFI servers.**

- **It also provide data backup for CIPS and Transmet systems.**

CIPS : A DATA INFORMATION CENTRE

PHYSICAL DATABASE		
OPERATIONAL	STANDBY	ARCHIVE

LOGICAL DATABASE

ObsDB	ModDB	ImgDB	FctDB	PrdDB

DATA STORAGE

Total Disk space: 31TB

Operational Disk space: 7TB ; Long Term Disk space: 24TB

Operational Usable space: 4TB ; Long Term Usable space: 13TB

DATA   ACCESS LAYERS

A gateway to data access or retrieval on line from data centre

Mode: 1. Web services   2. XML document   3. specific query scripts

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Zabbix - A supervisory tool for Varshamana Project

- **A network management system application designed to monitor and track the status of various network services, servers, and other network hardware centrally.**

- **Flexible e-mail notification of predefined events**

ZABBIX: MONITORING MANAGER

PERSONAL DASHBOARD

Favorite Graphs
TDELHINAT:Processor load5

Graphs »

Favorite Screens
...

Screens »

Favorite Maps
...

Maps »

System status

Host group	Disaster	High	Average	Warning	Information	Not classified
Backup Servers	0	0	0	0	0	0
CIPS DATA Servers	0	0	0	0	0	0
Cips Servers	0	2	0	0	0	0
Synergie Servers	0	1	0	0	0	0
Transmet Servers	0	6	0	0	0	0
ZABBIX Servers	0	0	0	0	0	0

Updated: 10:15:13

Status of ZABBIX

Parameter	Value	Details
ZABBIX server is running	Yes	-
Number of hosts (monitored/not monitored/templates)	41	22 / 0 / 19
Number of items (monitored/disabled/not supported)	807	778 / 12 / 17
Number of triggers (enabled/disabled)[true/unknown/false]	294	294 / 0 [9 / 126 / 159]
Number of users (online)	6	1
Required server performance, new values per second	29.2006	-

Updated: 10:15:13

Colour	Severity	
Information	Low	
Warning	Special attention required	
Average	A problem occurred	
High	System not operational	
Disaster	Critical	

Last 20 issues

Host	Issue	Last change	Age	Ack	Actions
synsrv1hq	Server synsrv1hq is unreachable	28 Apr 00:00:11	1m 18d 10h	No	-
cipsproc3	Server cipsproc3 is unreachable	10 Apr 11:00:31	2m 5d 23h	No	-
TDELHIINT	Server TDELHIINT is unreachable	07 Apr 11:26:03	2m 8d 22h	No	-
TDELHINAT	Server TDELHINAT is unreachable	07 Apr 11:25:44	2m 8d 22h	No	-
UDELHINAT	Server UDELHINAT is unreachable	07 Apr 11:24:21	2m 8d 22h	No	-
UDELHIINT	Server UDELHIINT is unreachable	07 Apr 11:23:39	2m 8d 22h	No	-
ARCHINAT	Server ARCHINAT is unreachable	07 Apr 11:22:37	2m 8d 22h	No	-

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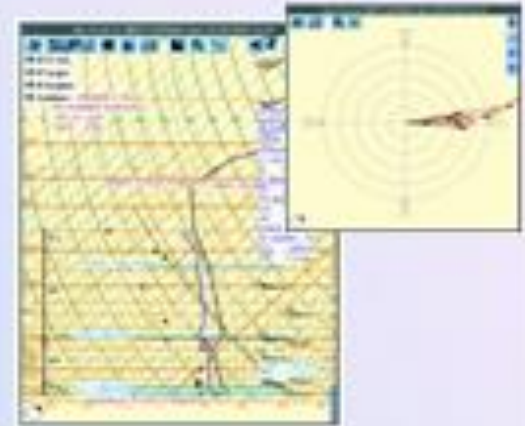INDIA METEOROLOGICAL DEPARTMENT

Modernisation of Forecasting System : Synergie

Global plotting

Conditional plotting

Profile

Gauges

Plane trajectories

Synergie

Synergie is new forecasting application software. It is basically a Graphical User Interface(GUI) tool to display and manipulate all sorts of operational weather data like observation, NWP Models, Satellite and DWR weather Radar by a good and experience weather forecaster for concluding the best possible correct weather forecast for public and aviation.

Synergie system has been installed and working at HQ New Delhi, All RMC's, DDGM(WF)Pune, RMTC Pune, MC Bhubneshwar, MC Srinagar, MC Jaipur, MC Dehradun, MO Kolkata, MO Palam.

Functions of Synergie

Any weather chart i.e. surface, upper air with selective parameter or combined can be plotted on real time basis.

Aviation Products(SADIS) can be displayed in Synergie.

Vertical wind profile can be plotted for any station.

NWP Model Forecast for any parameter for any range can be visualize if NWP model data available in synergie data base.

Satellite or DWR weather radar products can be consulted before issuance of WX Forecast.

Trend of the weather events for the past a few hours can be seen through animation facility.

Different weather parameters can be simultaneously study through superimposition technique.

From cyclone tracking module movement of the cyclone can be forecast well in advance.

Functions of Synergie

Through Forecaster expertise model (Nebul editor) Significant weather forecast can be edit on line and made available to users through MeteoFactory.

Meteogram for any weather parameter can be drawn.

Synergie server has the data storage capacity for the current five days only.

Synergie has inbuilt data archiving tool from CIPS data base for any past data available in CIPS Database.

Significant weather forecast can be edited on line and made available to users through MeteoFactory.
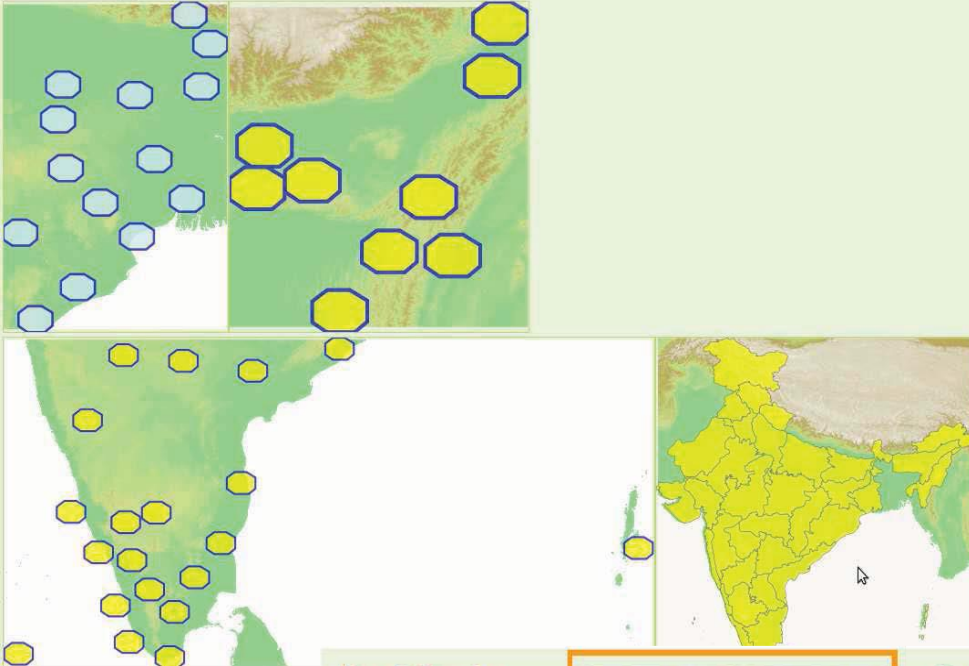
METEOFACTORY:

A system that can automatically produce the weather forecast into desired format, schedule and disseminate it through various means like ftp, email, SMS, voice etc at right time to the end users.
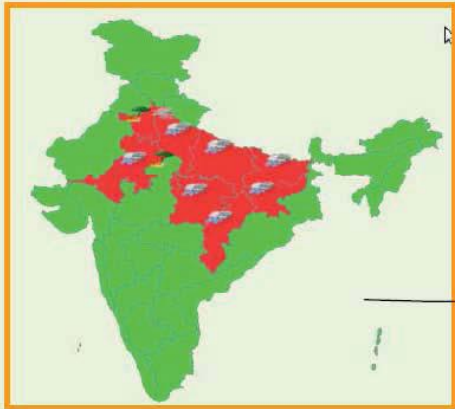
selected subareas ∨

Maps & Reports

Update Maps & Reports   Update Only Reports

Current Warning Maps
D1 ∨

Summary

New or upgrade of a warning

Parameter	Max Level	Start Date	End Date
Fog	RED	11 Mar 03:00	13 Mar 12:00
Fire	RED	11 Mar 03:00	13 Mar 12:00
Heavy Rain	RED	11 Mar 03:00	13 Mar 12:00

Updates history

date	user	activity
11 Mar 11:08	admin	Warning Maps have been updated
26 Feb 11:37	admin	Warning Reports have been written
26 Feb 11:37	admin	Warning Maps have been updated
22 Feb 08:36	admin	Les bulletins de vigilance ont été écrits
22 Feb 08:37	admin	Les cartes de vigilance ont été mis à jour

Display of a currently issued map

Information about the last updates

D1

| Hourly parameters | | | | | | | | | | | | | | | | | → Time range navigation |

End-user Edition

Name: Thomas
Production center: Cairo Production
Address: Adress
Mobile: 0628086930
Voice: 0561977946
Fax: 0561977946
Emails: thomas.papin@free.fr

Add a FTP account

FTP:
Alias	Host
JoomPROD	r10610.ovh.net
bbbb	bbbb

High priority: No
Enabled: True

Add product

Products:
Title	Dissemination	

Cancel

Add product ✖

Production Center
General BMKG Denpasar production ▾

Category
All categories ▾

Product
Bali Paradise ▾

Dissemination
FTP ▾

Format
PDF ▾

FTP Account
joomprod ▾

FTP Directory

FTP Filename
⑦

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